DYOMICS

Colours for Life

Catalogue

Fluorescent Dyes for Bioanalytical and Hightech Applications

7th Edition – autumn 2011

Content

Mission statement 2

Labels
- Table with spectral characteristics of DY-Labels 4
- UV-excitation 7
- Blue-green excitation 8
- Green excitation 13
- Orange excitation 23
- Red excitation 29
- Far red excitation 44
- NIR-excitation 54
- MegaStokes-Dyes for multi-colour-detection 76
- Quencher 82

Special Dyes
- FatRed 90
- Protein-Stains 91
- DNA-Stains 94
- MegaStokes-Dyes 98
- Direct from Research 102
- Sensor Dyes 109
- Laser Dyes 110

Haptens
- Fluorescently labeled biotins 111
- Fluorescently labeled phalloidins 111

Fluorescently labeled proteins
- Fluorescently labeled streptavidin 112
- Fluorescently labeled antibodies for secondary detection 112
- Others 112

Dyomics Kits & Packs 113

Nucleotides
- Aminoallyl-dUTP for enzymatic incorporation 115
- Fluorescently labeled nucleotides 115

Protocols 116

Services 119

Recommended literature 120

Acknowledgement 127

Mission Statement

Development and growth in the use of organic dyes in biotechnology, biomedical research and clinical diagnostics is continuing. Powerful new markers and/or probes which have been constructed using knowledge of both organic chemistry and molecular biology, are combined with automated imaging workstations to define the content, activity, and dynamics of different materials in life science. These innovative applications have led to a new dye chemistry. At present, the design of functional chromophores and fluorophores is the most significant and enticing field in dye chemistry.

With more than three decades of experience in synthesis of functional fluorescent dyes, the staff of Dyomics have an excellent scientific foundation in the search for labels for bioanalytics and diagnostics. Dyomics accepts the challenge to develop new high quality "tailor made" dyes for bioanalysis and related fields of high technology. This is, however, not the only goal of our company.

As an established company, we are open-minded and flexible in nearly every aspect of colour chemistry. Our product portfolio ranges from different labels and stains for optical sensing which includes highly hydrophilic probes and dyes to new MegaStokes dyes with enhanced Stokes shift.

In cooperation with business partners in the area of molecular biology and pharmaceutical research we continue the development of new tailored products. Customers' requests for special modifications and/or synthesis are always welcome and belong to our day-to-day business.

Our greatest wish is that our products and services will satisfy you as the customer so that we may establish a long lasting relationship with each one of you.

Products

The production of new chromophores has extensively changed the possibilities for detection of biomolecules and their interaction in recent years and has enabled previously impossible insights to be made.

The advantages of optical detection methods are in the speed of the measuring process and the high sensitivity (up to single molecule detection). In principal, the collection of data over time as well as parallel or multiple readings are feasible. Hence it is possible to answer an array of questions in biotechnology or medical diagnostics in a cost-saving and reliable manner including the application of miniaturized analysers.

In this area Dyomics offers technical know how for diverse users and hardware developers in the choice and design of suitable chromophores optimized for particular excitation and emission wavelengths.

Currently, there are more than 60 fluorophores and quenchers of the DY family available as NHS- and TFP-esters, maleimides and other derivatives for the labeling of biomolecules.
In particular, our company has great experience in the development of fluorophores which can be excited with low-cost diode lasers and show emission in the red and near infrared areas of the spectrum, as well as with custom made FRET systems.

According to the demands of the customer, the activated DY dyes can be coupled covalently to amino acids, antibodies, hormones, sugars, dNTPs, oligonucleotides or other affinity tags to corresponding probes or markers.

The proprietary DY dyes are especially useful in the analysis of enzyme kinetics and DNA sequences, in the evaluation of chromosomes by Fluorescence-In-Situ-Hybridisation (FISH), in Fluorescence Correlation Spectroscopy (FCS), in FRET assays, in microscopy and in DNA and protein chips although new applications are always being discovered. Current developments, e.g., include cell organelle specific stains and probes.

Quality Statement

Dyomics is committed to a high standard of quality. Since the second year after the foundation of the company in 1999, Dyomics has worked in accordance to the quality management system DIN EN 9001:2000 (www.tuevclub.com).

The continuous monitoring and documentation of all processes, the exclusive use of certified reagents and the final control of the products using ^{1}H- and ^{13}C-NMR, LC/MS, HPLC, UV-VIS and fluorescence spectroscopy guarantee a high conformity and quality of every single product, a guarantee for reproducible results.

Quality management relates not only to the different products, but also to the rapid processing of both routine and R&D contracts. Characteristic therefore is the obliging and customer orientated service and the efficient implementation of synthesis. Ultimately the key to the fulfilment of our quality claims is our qualified and experienced work force.

Sincerely yours,

Dr. Peter Czerney
(Managing Director)

Table with spectral characteristics of DY-Labels

label	absorption maximum* [nm]	molar absorbance* [l · mol^{-1} · cm^{-1}]	emission maximum* [nm]	molecular weight# [g · mol^{-1}]	order number	page
DY-350	353	19,000	432	777.03	350-	7
DY-405	400	32,000	423	695.59	405-	8
DY-415	418	34,000	463	476.48	415-	9
DY-490	491	73,000	515	769.66	490-	10
DY-495	494	70,000	521	525.94	495-	11
DY-505	507	80,000	528	523.97	505-	12
DY-530	533	100,000	554	695.75	530-	13
DY-547	558	150,000	573	638.74	547-	14
DY-548	558	150,000	572	754.81	548-	15
DY-549	562	150,000	577	884.91	549-	16
DY-549P1	563	150,000	578	942.99	549P1-	17
DY-550	562	120,000	577	667.76	550-	18
DY-554	544	100,000	570	580.08	554-	19
DY-555	547	100,000	573	636.19	555-	20
DY-556	548	100,000	574	715.80	556-	21
DY-560	560	120,000	578	671.84	560-	22
DY-590	581	120,000	600	719.88	590-	23
DY-591	581	120,000	598	765.91	591-	24
DY-594	594	92,000	615	937.06	594-	25
DY-605	600	110,000	624	992.18	605-	26
DY-610	610	80,000	632	667.76	610-	27
DY-615	623	200,000	643	578.73	615-	28
DY-630	638	200,000	658	634.84	630-	29
DY-631	637	200,000	657	736.88	631-	30
DY-632	636	200,000	658	852.96	632-	31
DY-633	638	200,000	658	750.91	633-	32
DY-634	636	200,000	657	969.03	634-	33
DY-635	648	200,000	670	658.86	635-	34
DY-636	647	200,000	670	760.91	636-	35
DY-647	653	250,000	673	664.78	647-	36
DY-648	655	250,000	676	780.85	648-	37
DY-649	656	250,000	670	910.95	649-	38
DY-649P1	654	250,000	672	969.03	649P1-	39
DY-650	656	220,000	676	686.92	650-	40
DY-651	655	220,000	677	788.96	651-	41
DY-652	653	220,000	676	905.03	652-	42
DY-654	653	220,000	677	1007.08	654-	43
DY-675	675	180,000	699	706.91	675-	44
DY-676	675	180,000	699	808.95	676-	45
DY-677	674	180,000	698	925.02	677-	46
DY-678	674	180,000	694	1027.07	678-	47
DY-679	679	200,000	698	1099.09	679-	48
DY-679P1	679	200,000	697	1143.14	679P1-	49
DY-680	691	140,000	709	634.84	680-	50
DY-681	692	140,000	709	736.88	681-	51
DY-682	692	140,000	709	852.96	682-	52

Table with spectral characteristics of DY-Labels

label	absorption maximum* [nm]	molar absorbance* [l · mol^{-1} · cm^{-1}]	emission maximum* [nm]	molecular weight# [g · mol^{-1}]	order number	page
DY-700	707	140,000	728	668.86	700-	54
DY-701	709	140,000	730	770.90	701-	55
DY-703	705	140,000	721	800.93	703-	56
DY-704	706	140,000	721	902.97	704-	57
DY-730	734	240,000	755	660.88	730-	58
DY-731	736	240,000	755	762.92	731-	59
DY-732	735	240,000	756	879.00	732-	60
DY-734	733	240,000	755	995.07	734-	61
DY-749	759	240,000	780	936.99	749-	62
DY-750	751	270,000	774	712.96	750-	63
DY-751	752	270,000	772	814.99	751-	64
DY-752	750	270,000	771	931.07	752-	65
DY-754	748	270,000	771	1033.12	754-	66
DY-776	772	240,000	787	834.98	776-	67
DY-777	770	240,000	788	951.06	777-	68
DY-778	767	240,000	787	1053.11	778-	69
DY-780	783	170,000	799	660.88	780-	70
DY-781	784	170,000	796	762.92	781-	71
DY-782	785	170,000	794	879.00	782-	72
DY-800	777	280,000	791	953.08	800-	73
DY-831	844	220,000	875	788.96	831-	74
DY-480XL	504	50,000	631	514.60	480XL-	76
DY-481XL	519	50,000	648	630.67	481XL-	77
DY-485XL	488	50,000	559	502.59	485XL-	78
DY-510XL	509	50,000	590	554.67	510XL-	79
DY-520XL	522	50,000	662	514.60	520XL-	80
DY-521XL	526	50,000	666	630.67	521XL-	81
DYQ-425	425	24,500	–	784.37	DYQ-425-	86
DYQ-505	504	39,000	–	713.75	DYQ-505-	86
DYQ-1	543	48,000	–	788.77	DYQ1-	82
DYQ-2	641	90,000	–	745.81	DYQ2-	83
DYQ-660	660	140,000	–	668.86	660Q-	88
DYQ-661	662	140,000	–	770.90	661Q-	89
DYQ-3	683	80,000	–	802.86	DYQ3-	84
DYQ-700	696	48,500	–	808.92	DYQ-700-	87
DYQ-4	766	180,000	–	796.94	DYQ4-	85

Chemical structures in the supplement.

* The given values can change depending on the environment of the label (nature of conjugate and solvent).
\# These are the molecular weights of the carboxylic acids.

Aminoreactive Dyes

Primary amino groups are natural components of peptides and proteins which consist of amino acids. At least one amino group is positioned at the N-terminus of the peptide chain. Other biomolecules can be modified in such way that an amino group is incorporated without changing its activity or functionality. The most common examples are 5'-aminomodified DNA oligomers and cDNA bearing aminoallyl-dU-units.

There are several functional groups which react with primary amino groups forming a covalent bond between the dye and the amino containing (bio-)molecule under mild conditions not harmful to biologically active compounds. The most common reactive group being the NHS-ester (N-Hydroxysuccinimidyl-ester). At a pH between 8 and 9, the NHS-ester reacts specifically with primary amino groups. Depending on the purity (content of active NHS-ester), quantitative yields can be achieved.

Dyomics offers further aminoreactive groups too, e.g. TFP-ester (2,3,5,6-Tetrafluorophenyl-ester) or STP-ester (4-Sulfo-2,3,5,6-Tetrafluorophenyl-ester).
At Dyomics, special attention is paid to the activity of our labels. We carefully store and ship our DY-NHS-esters to supply our customers with high quality reagents. If the activity of the label suffered during shipment we replace the label for free.

Maleimides

As well as primary amino groups, thiol groups are preferred targets for fluorescent labels. There are various chemical moieties which form stable chemical bonds with thiol groups, including maleimides and iodoacetamides. The low influence of a neutral thiol-reactive label on the isoelectric point of a protein is an advantage over the labeling of amino groups in proteins and makes differential 2D-gel electrophoresis possible. Maleimides couple to thiol groups under very mild conditions at pH around 7.

Aminomodified labels

Labels with amino groups can be used for cross coupling to carboxy groups via a mild in-situ activation. Aminomodified labels can also be incorporated into a matrix during polymerization. Coupling reactions should be performed at pH 8.5 or higher since the dyes are delivered as ammonium salts.

Biotinylated labels and others

These modifications can be used to bind to streptavidin or avidin under physiological conditions, making it quite easy to detect the above proteins which are widely used in bioanalytics.

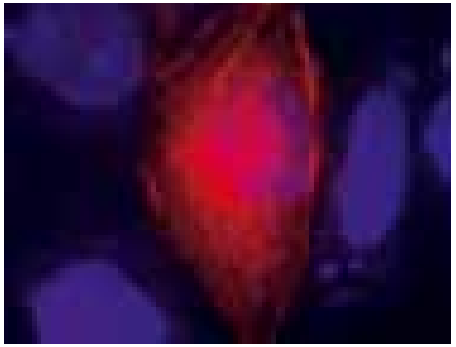
Dyomics offers a wide range of further reactive groups e.g. Hydrazide, Azide, Acetylene, Cadaverine. If you have need for a special modified label, please ask us.

DY-350

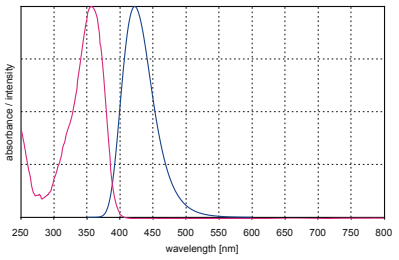
Absorption/emission max.:
353 nm / 432 nm (in PBS)

Molar absorbance:
19,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, ethanol, DMF, DMSO



Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	777.03	$C_{19}H_{20}N_2O_{11}S_2 * 2\ C_8H_{20}N$	350-00
NHS-ester	874.10	$C_{23}H_{23}N_3O_{13}S_2 * 2\ C_8H_{20}N$	350-01
Amino-derivative	689.86	$C_{21}H_{27}N_4O_{10}S_2 * C_8H_{20}N$	350-02
Maleimide	899.15	$C_{25}H_{26}N_4O_{12}S_2 * 2\ C_8H_{20}N$	350-03



Structure on request

DY-405

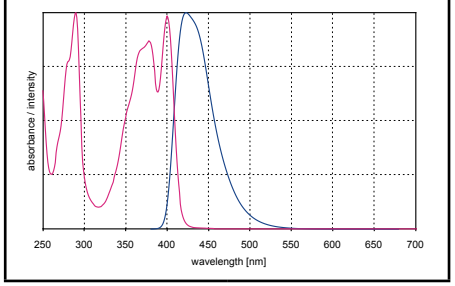
Absorption/emission max.:
400 nm / 423 nm (in PBS)

Molar absorbance:
32,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, ethanol, DMF, DMSO

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	695.59	$C_{24}H_{20}NO_{13}S_3 * 3\ Na$	405-00
NHS-ester	792.66	$C_{28}H_{23}N_2O_{15}S_3 * 3\ Na$	405-01
Amino-derivative	715.69	$C_{26}H_{27}N_3O_{12}S_3 * 2\ Na$	405-02
Maleimide	817.72	$C_{30}H_{26}N_3O_{14}S_3 * 3\ Na$	405-03

Structure on request

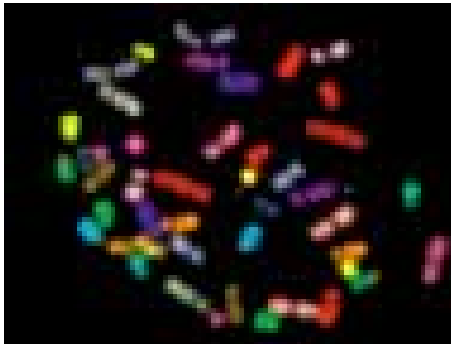


DY-415

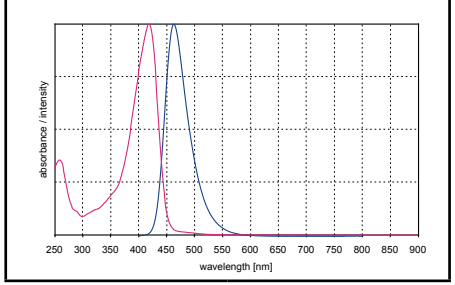
Absorption/emission max.:
418 nm / 463 nm (in Ethanol)

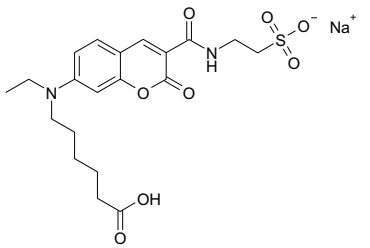
Molar absorbance:
34,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, ethanol, DMF, DMSO

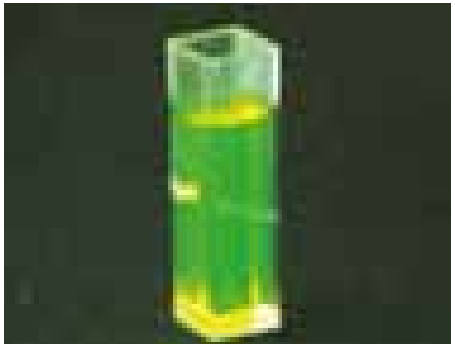


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	476.48	$C_{20}H_{25}N_2O_8S * Na$	415-00
NHS-ester	573.56	$C_{24}H_{28}N_3O_{10}S * Na$	415-01
Amino-derivative	496.59	$C_{22}H_{32}N_4O_7S$	415-02
Maleimide	598.61	$C_{26}H_{31}N_4O_9S * Na$	415-03





DY-490



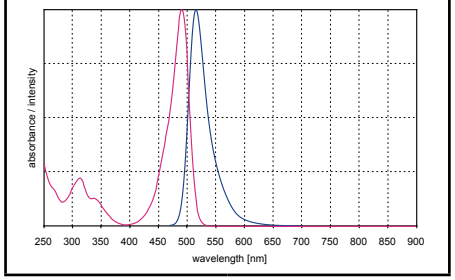
Absorption/emission max.:
491 nm / 515 nm (in PBS)

Molar absorbance:
73,000 $M^{-1}cm^{-1}$

Comments:
- alternative to AlexaFluor™ 488
- soluble in water, methanol
- bright green, pH-stable emission
- suitable for flow cytometry, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	769.66	$C_{24}H_{22}N_3O_{13}S_3$ * CF_3COO	490-00
NHS-ester	1011.20	$C_{28}H_{22}N_4O_{15}S_3$ * 2 $C_8H_{20}N$	490-01
Amino-derivative	925.78	$C_{26}H_{29}N_5O_{12}S_3$ * 2 CF_3COO	490-02
Maleimide	799.74	$C_{30}H_{26}N_5O_{14}S_3$ * Na	490-03

Structure on request

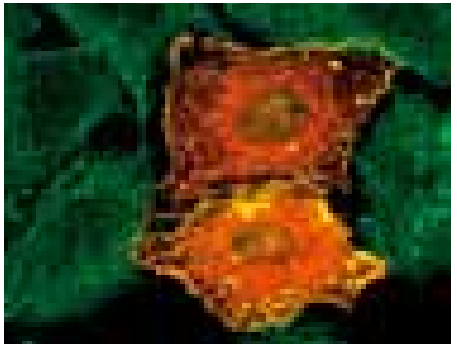


DY-495

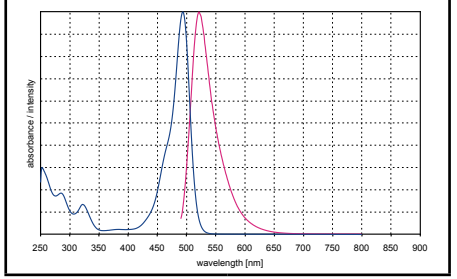
Absorption/emission max.:
494 nm / 521 nm (in pH9-buffer)

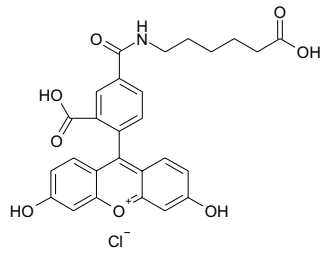
Molar absorbance:
70,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

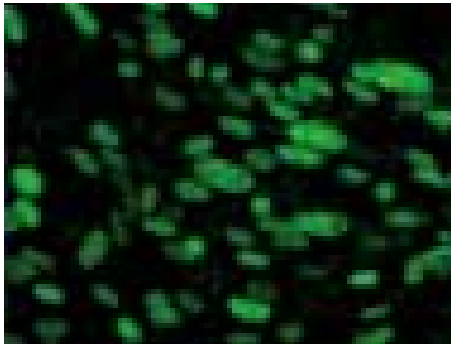


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	525.94	$C_{27}H_{24}NO_8$ * Cl	495-00
NHS-ester	623.02	$C_{31}H_{27}N_2O_{10}$ * Cl	495-01
Amino-derivative	604.49	$C_{29}H_{31}N_3O_7$ * 2 Cl	495-02
Maleimide	647.07	$C_{33}H_{30}N_3O_9$ * Cl	495-03





DY-505

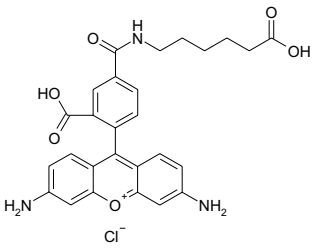


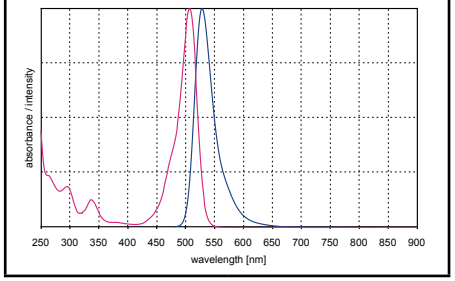
Absorption/emission max.:
507 nm / 528 nm (in Ethanol)

Molar absorbance:
80,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	523.97	$C_{27}H_{26}N_3O_6 * Cl$	505-00
NHS-ester	621.05	$C_{31}H_{29}N_4O_8 * Cl$	505-01
Amino-derivative	602.53	$C_{29}H_{33}N_5O_5 * 2\ Cl$	505-02
Maleimide	723.67	$C_{33}H_{32}N_5O_7 * CF_3CO_2$	505-03



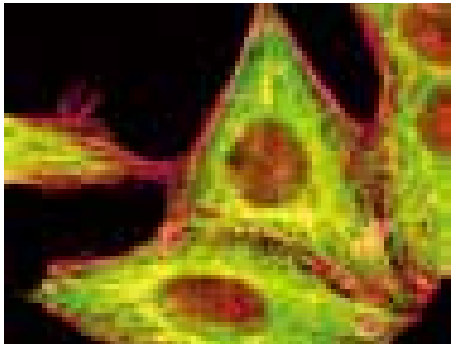


DY-530

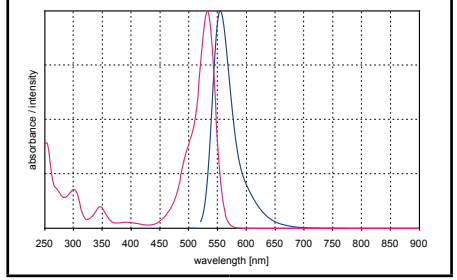
Absorption/emission max.:
533 nm / 554 nm (in PBS)

Molar absorbance:
100,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol

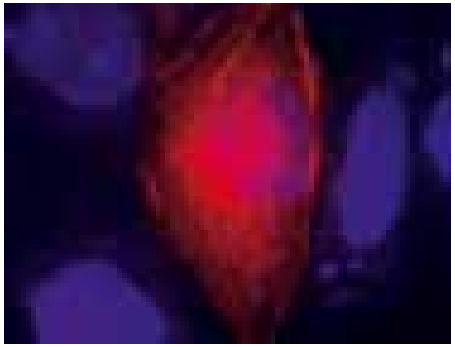


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	695.75	$C_{31}H_{34}N_3O_{10}S_2 * Na$	530-00
NHS-ester	792.82	$C_{35}H_{37}N_4O_{12}S_2 * Na$	530-01
Amino-derivative	715.85	$C_{33}H_{41}N_5O_9S_2$	530-02
Maleimide	817.88	$C_{37}H_{40}N_5O_{11}S_2 * Na$	530-03



Structure on request

DY-547



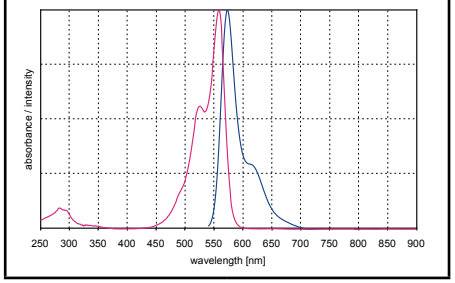
Absorption/emission max.:
558 nm / 573 nm (in Ethanol)

Molar absorbance:
150,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	638.74	$C_{30}H_{35}N_2O_8S_2 * Na$	547-00
NHS-ester	735.81	$C_{34}H_{38}N_3O_{10}S_2 * Na$	547-01
Amino-derivative	658.84	$C_{32}H_{42}N_4O_7S_2$	547-02
Maleimide	760.87	$C_{36}H_{41}N_4O_9S_2 * Na$	547-03

Structure on request

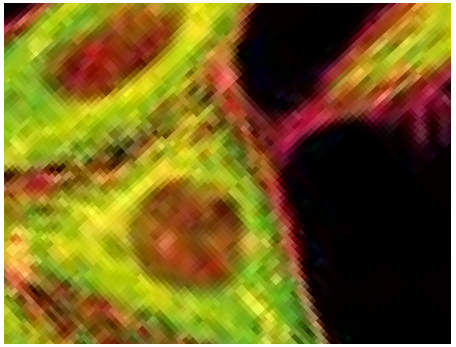


DY-548

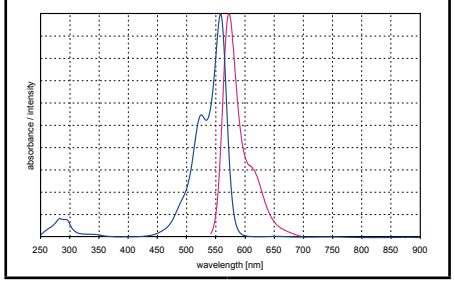
Absorption/emission max.:
558 nm / 572 nm (in Ethanol)

Molar absorbance:
150,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO

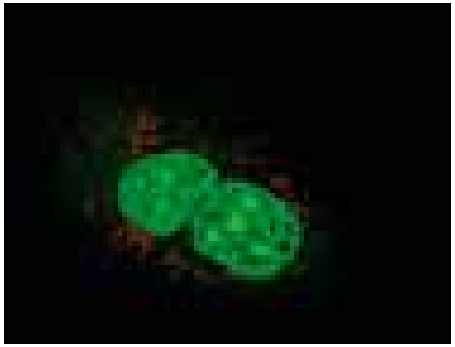


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	754.81	$C_{31}H_{36}N_2O_{11}S_3 * 2\ Na$	548-00
NHS-ester	851.89	$C_{35}H_{39}N_3O_{13}S_3 * 2\ Na$	548-01
Amino-derivative	774.91	$C_{33}H_{43}N_4O_{10}S_3 * Na$	548-02
Maleimide	876.94	$C_{37}H_{42}N_4O_{12}S_3 * 2\ Na$	548-03



Structure on request

DY-549



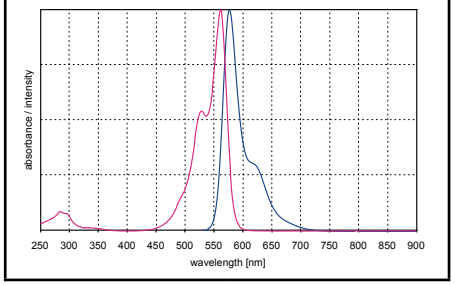
Absorption/emission max.:
562 nm / 577 nm (in Ethanol)

Molar absorbance:
150,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	884.91	$C_{33}H_{39}N_2O_{14}S_4$ * 3 Na	549-00
NHS-ester	981.98	$C_{37}H_{42}N_3O_{16}S_4$ * 3 Na	549-01
Amino-derivative	905.01	$C_{35}H_{46}N_4O_{13}S_4$ * 2 Na	549-02
Maleimide	1007.04	$C_{39}H_{45}N_4O_{15}S_4$ * 3 Na	549-03

Structure on request

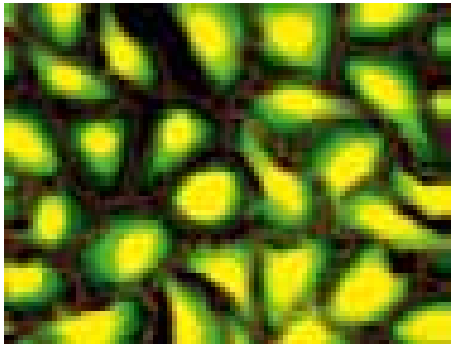


DY-549P1

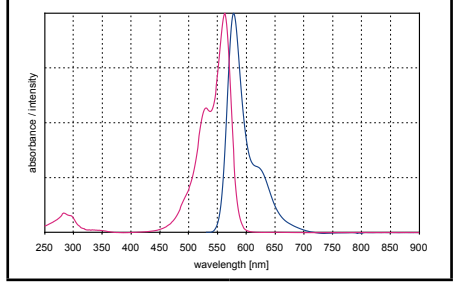
Absorption/emission max.:
563 nm / 578 nm (in Ethanol)

Molar absorbance:
150,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol

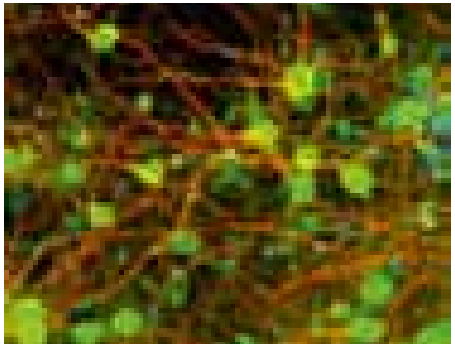


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	942.99	$C_{36}H_{45}N_2O_{15}S_4$ * 3 Na	549P1-00
NHS-ester	1040.06	$C_{40}H_{48}N_3O_{17}S_4$ * 3 Na	549P1-01
Amino-derivative	963.09	$C_{38}H_{52}N_4O_{14}S_4$ * 2 Na	549P1-02
Maleimide	1065.12	$C_{42}H_{51}N_4O_{16}S_4$ * 3 Na	549P1-03



Structure on request

DY-550

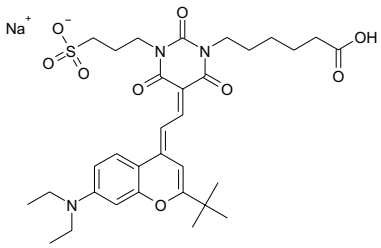


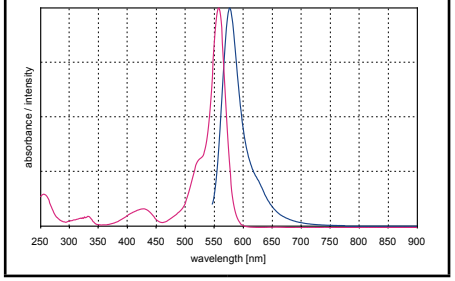
Absorption/emission max.:
562 nm / 577 nm (in Ethanol)

Molar absorbance:
120,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	667.76	$C_{32}H_{42}N_3O_9S * Na$	550-00
NHS-ester	764.83	$C_{36}H_{45}N_4O_{11}S * Na$	550-01
Amino-derivative	687.86	$C_{34}H_{49}N_5O_8S$	550-02
Maleimide	789.89	$C_{38}H_{48}N_5O_{10}S * Na$	550-03



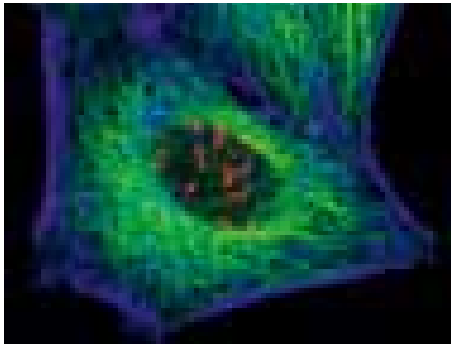


DY-554

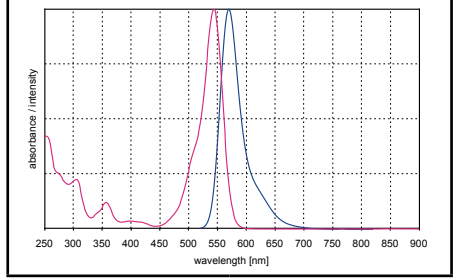
Absorption/emission max.:
544 nm / 570 nm (in Ethanol)

Molar absorbance:
100,000 $M^{-1}cm^{-1}$

Comments:
– soluble in methanol, ethanol, DMF, DMSO
– bright solid state emission
– suitable for microarray experiments, FisH microscopy, gel electrophoresis

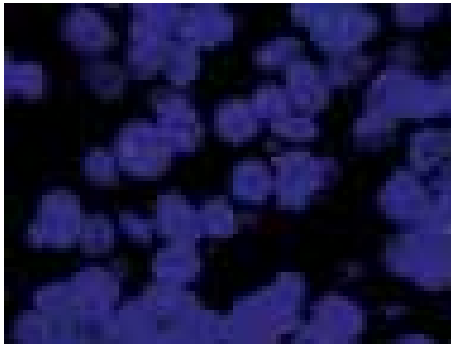


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	580.08	$C_{31}H_{34}N_3O_6 * Cl$	554-00
NHS-ester	677.16	$C_{35}H_{37}N_4O_8 * Cl$	554-01
Amino-derivative	622.17	$C_{33}H_{40}N_5O_5 * Cl$	554-02
Maleimide	779.78	$C_{37}H_{40}N_5O_7 * CF_3CO_2$	554-03



Structure on request

DY-555



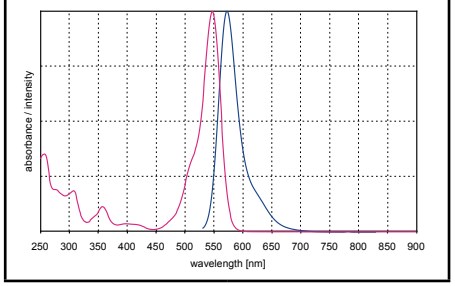
Absorption/emission max.:
547 nm / 573 nm (in Ethanol)

Molar absorbance:
100,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	636.19	$C_{35}H_{42}N_3O_6$ * Cl	555-00
NHS-ester	733.27	$C_{39}H_{45}N_4O_8$ * Cl	555-01
Amino-derivative	678.28	$C_{37}H_{48}N_5O_5$ * Cl	555-02
Maleimide	721.86	$C_{41}H_{47}N_5O_7$	555-03

Structure on request

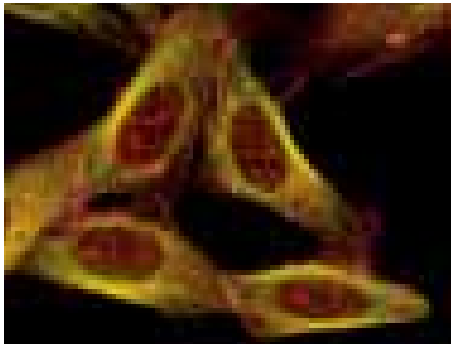


DY-556

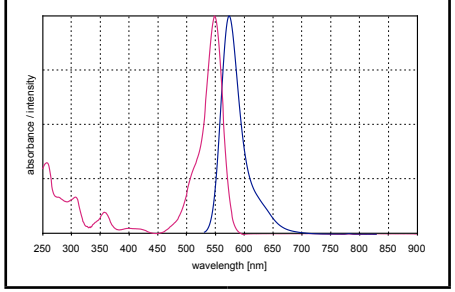
Absorption/emission max.:
548 nm / 574 nm (in Ethanol)

Molar absorbance:
100,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

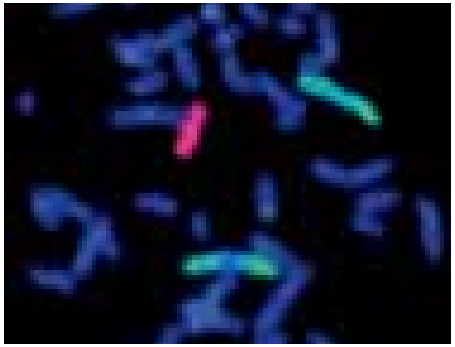


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	715.80	$C_{36}H_{42}N_3O_9S$ * Na	556-00
NHS-ester	812.88	$C_{40}H_{45}N_4O_{11}S$ * Na	556-01
Amino-derivative	735.91	$C_{38}H_{49}N_5O_8S$	556-02
Maleimide	837.93	$C_{42}H_{48}N_5O_{10}S$ * Na	556-03



Structure on request

DY-560



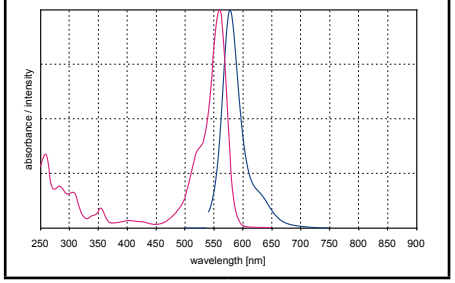
Absorption/emission max.:
560 nm / 578 nm (in Ethanol)

Molar absorbance:
120,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	671.84	$C_{33}H_{41}N_3O_8S_2$	560-00
NHS-ester	768.91	$C_{37}H_{44}N_4O_{10}S_2$	560-01
Amino-derivative	750.38	$C_{35}H_{48}N_5O_7S_2$ * Cl	560-02
Maleimide	793.97	$C_{39}H_{47}N_5O_9S_2$	560-03

Structure on request

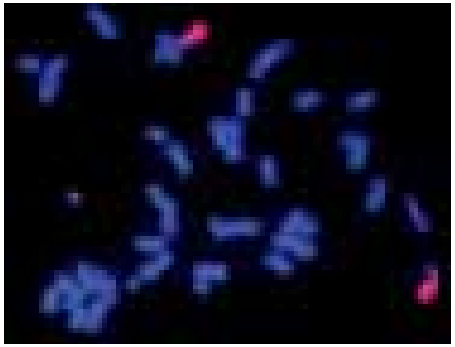


DY-590

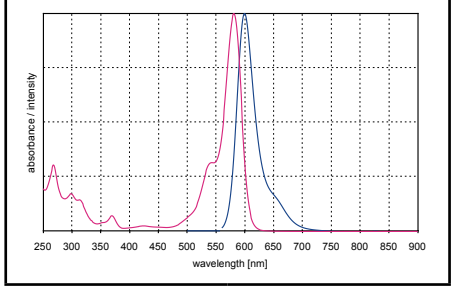
Absorption/emission max.:
581 nm / 600 nm (in Ethanol)

Molar absorbance:
120,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

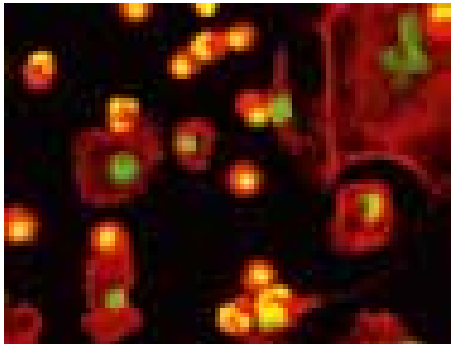


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	719.88	$C_{37}H_{41}N_3O_8S_2$	590-00
NHS-ester	816.96	$C_{41}H_{44}N_4O_{10}S_2$	590-01
Amino-derivative	798.42	$C_{39}H_{48}N_5O_7S_2$ * Cl	590-02
Maleimide	842.01	$C_{43}H_{47}N_5O_9S_2$	590-03



Structure on request

DY-591



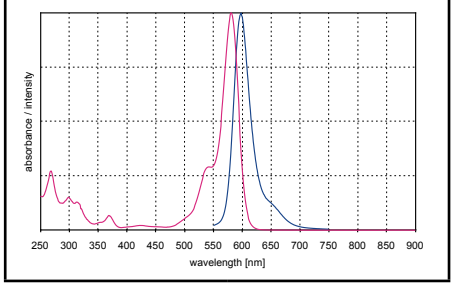
Absorption/emission max.:
581 nm / 598 nm (in Ethanol)

Molar absorbance:
120,000 $M^{-1}cm^{-1}$

Comments:
– more hydrophilic than DY-590
– similar to Texas Red™

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	765.91	$C_{38}H_{43}N_3O_{10}S_2$	591-00
NHS-ester	862.98	$C_{42}H_{46}N_4O_{12}S_2$	591-01
Amino-derivative	844.45	$C_{40}H_{50}N_5O_9S_2$ * Cl	591-02
Maleimide	888.04	$C_{44}H_{49}N_5O_{11}S_2$	591-03

Structure on request

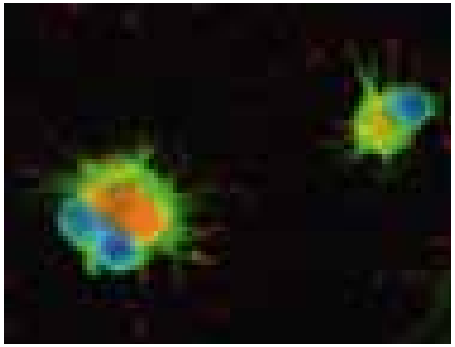


DY-594

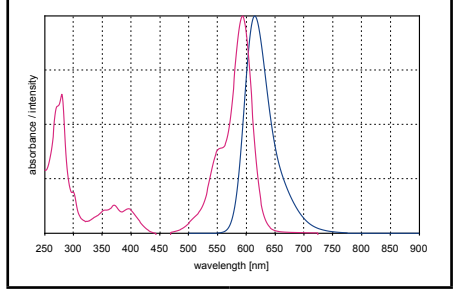
Absorption/emission max.:
594 nm / 615 nm (in Ethanol)

Molar absorbance:
92,000 $M^{-1}cm^{-1}$

Comments:
– similar to AlexaFluor™ 594

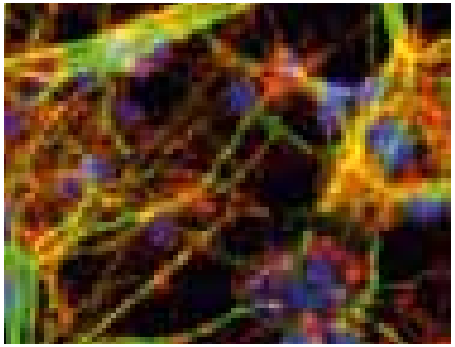


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	937.06	$C_{39}H_{44}N_4O_{15}S_4$	594-00
NHS-ester	1078.10	$C_{43}H_{45}N_5O_{17}S_4$ * 2 Na	594-01
Amino-derivative	979.14	$C_{41}H_{50}N_6O_{14}S_4$	594-02
Maleimide	1059.19	$C_{45}H_{50}N_6O_{16}S_4$	594-03



Structure on request

DY-605



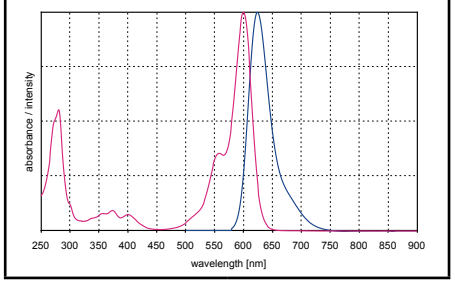
Absorption/emission max.:
600 nm / 624 nm (in Ethanol)

Molar absorbance:
110,000 $M^{-1}cm^{-1}$

Comments:
– hydrophilic dye

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	992.18	$C_{43}H_{53}N_5O_{14}S_4$	605-00
NHS-ester	1089.26	$C_{47}H_{56}N_6O_{16}S_4$	605-01
Amino-derivative	1148.30	$C_{45}H_{60}N_7O_{13}S_4 * C_2F_3O_2$	605-02
Maleimide	1114.31	$C_{49}H_{59}N_7O_{15}S_4$	605-03

Structure on request

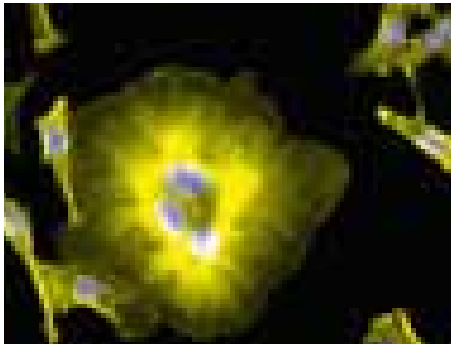


DY-610

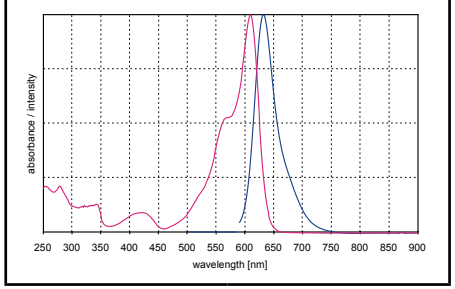
Absorption/emission max.:
610 nm / 632 nm (in Ethanol)

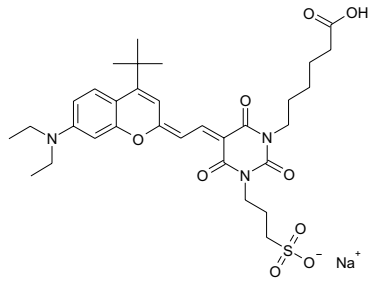
Molar absorbance:
80,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF, DMSO
– bright solid state emission



Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	667.76	$C_{32}H_{42}N_3O_9S * Na$	610-00
NHS-ester	764.82	$C_{36}H_{45}N_4O_{11}S * Na$	610-01
Amino-derivative	687.86	$C_{34}H_{49}N_5O_8S$	610-02
Maleimide	789.89	$C_{38}H_{48}N_5O_{10}S * Na$	610-03





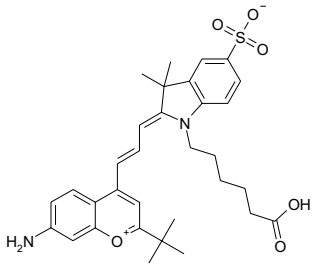
DY-615

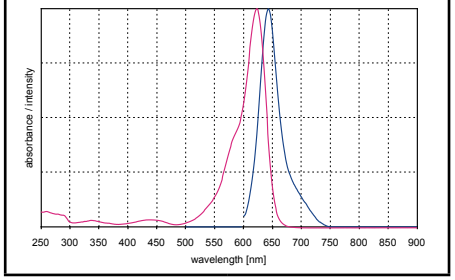
Absorption/emission max.:
623 nm / 643 nm (in Ethanol)

Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	578.73	$C_{32}H_{38}N_2O_6S$	615-00
NHS-ester	675.80	$C_{36}H_{41}N_3O_8S$	615-01
Amino-derivative	657.28	$C_{34}H_{45}N_4O_5S * Cl$	615-02
Maleimide	700.86	$C_{38}H_{44}N_4O_7S$	615-03



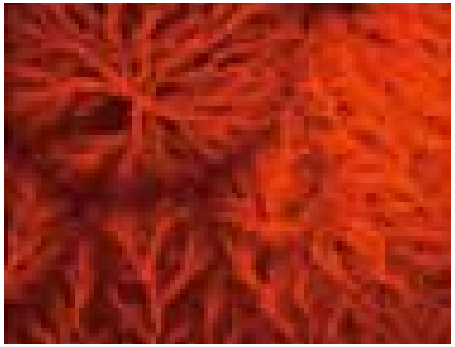


DY-630

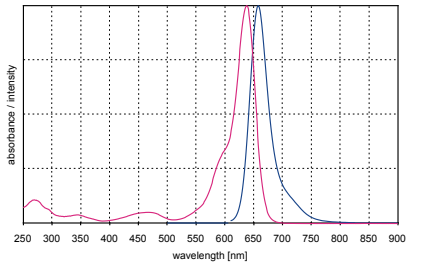
Absorption/emission max.:
638 nm / 658 nm (in Ethanol)

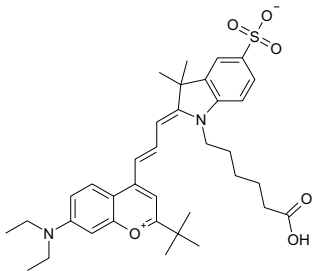
Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

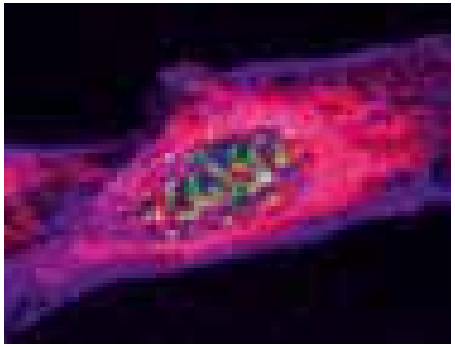


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	634.84	$C_{36}H_{46}N_2O_6S$	630-00
NHS-ester	731.92	$C_{40}H_{49}N_3O_8S$	630-01
Amino-derivative	713.38	$C_{38}H_{53}N_4O_5S * Cl$	630-02
Maleimide	756.97	$C_{42}H_{52}N_4O_7S$	630-03





DY-631

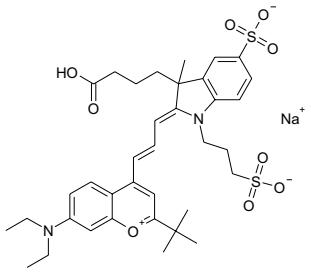


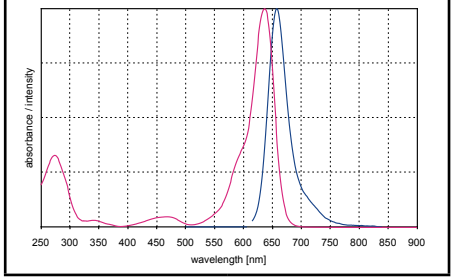
Absorption/emission max.:
637 nm / 657 nm (in Ethanol)

Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	736.88	$C_{36}H_{45}N_2O_9S_2$ * Na	631-00
NHS-ester	833.95	$C_{40}H_{48}N_3O_{11}S_2$ * Na	631-01
Amino-derivative	756.99	$C_{38}H_{52}N_4O_8S_2$	631-02
Maleimide	859.01	$C_{42}H_{51}N_4O_{10}S_2$ * Na	631-03



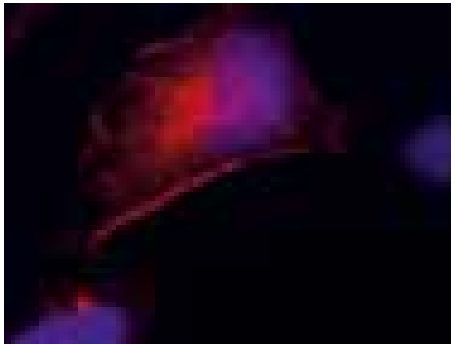


DY-632

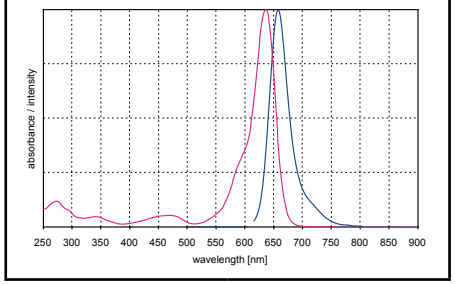
Absorption/emission max.:
636 nm / 658 nm (in Ethanol)

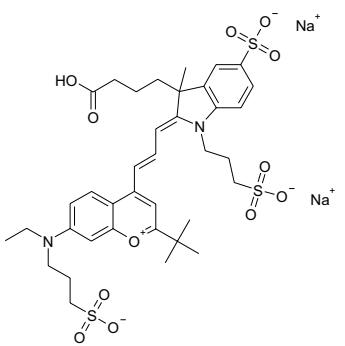
Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

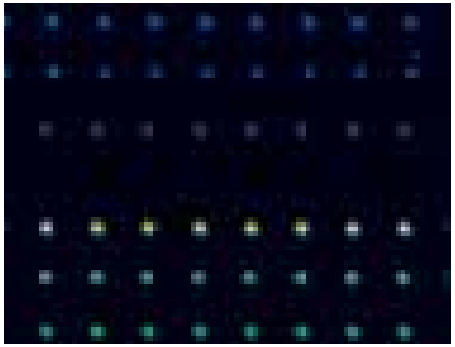


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	852.96	$C_{37}H_{46}N_2O_{12}S_3$ * 2 Na	632-00
NHS-ester	950.03	$C_{41}H_{49}N_3O_{14}S_3$ * 2 Na	632-01
Amino-derivative	873.05	$C_{39}H_{53}N_4O_{11}S_3$ * Na	632-02
Maleimide	975.08	$C_{43}H_{52}N_4O_{13}S_3$ * 2 Na	632-03





DY-633

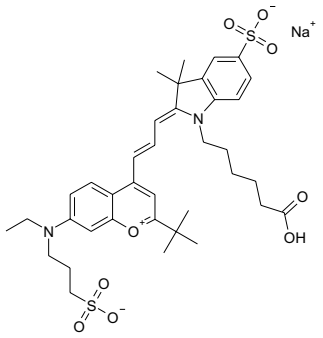


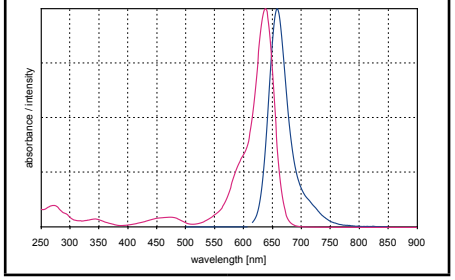
Absorption/emission max.:
638 nm / 658 nm (in Ethanol)

Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	750.91	$C_{37}H_{47}N_2O_9S_2$ * Na	633-00
NHS-ester	847.98	$C_{41}H_{50}N_3O_{11}S_2$ * Na	633-01
Amino-derivative	771.02	$C_{39}H_{54}N_4O_8S_2$	633-02
Maleimide	873.04	$C_{43}H_{53}N_4O_{10}S_2$ * Na	633-03



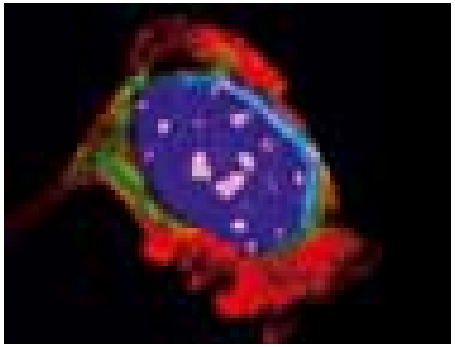


DY-634

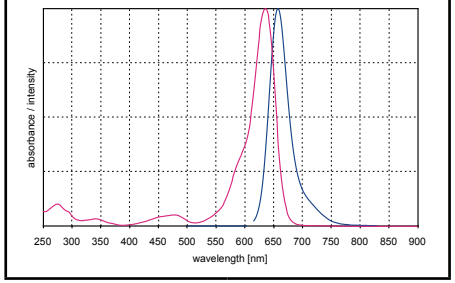
Absorption/emission max.:
636 nm / 657 nm (in Ethanol)

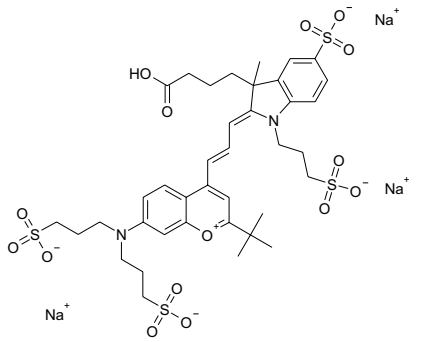
Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO

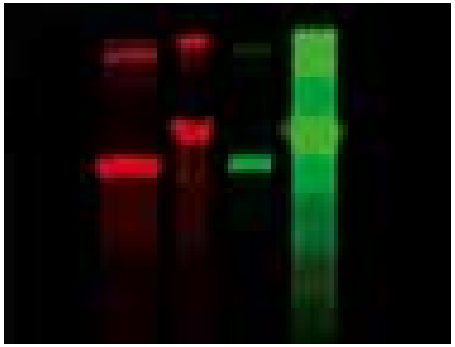


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	969.03	$C_{38}H_{47}N_2O_{15}S_4$ * 3 Na	634-00
NHS-ester	1066.10	$C_{42}H_{50}N_3O_{17}S_4$ * 3 Na	634-01
Amino-derivative	989.12	$C_{40}H_{54}N_4O_{14}S_4$ * 2 Na	634-02
Maleimide	1091.16	$C_{44}H_{53}N_4O_{16}S_4$ * 3 Na	634-03





DY-635

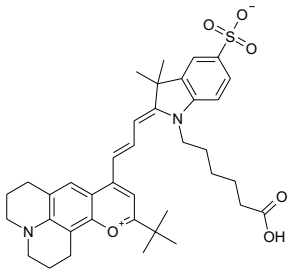


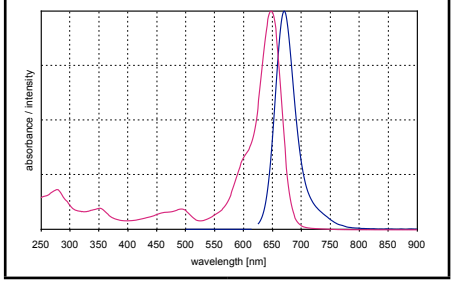
Absorption/emission max.:
648 nm / 670 nm (in Ethanol)

Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	658.86	$C_{38}H_{46}N_2O_6S$	635-00
NHS-ester	755.93	$C_{42}H_{49}N_3O_8S$	635-01
Amino-derivative	737.41	$C_{40}H_{53}N_4O_5S * Cl$	635-02
Maleimide	780.99	$C_{44}H_{52}N_4O_7S$	635-03



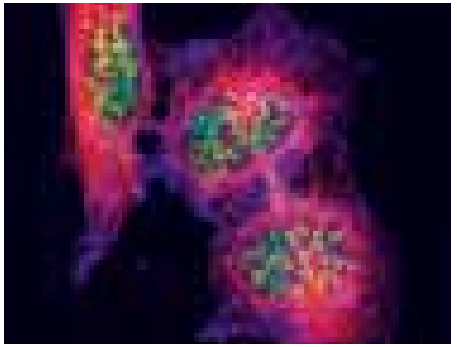


DY-636

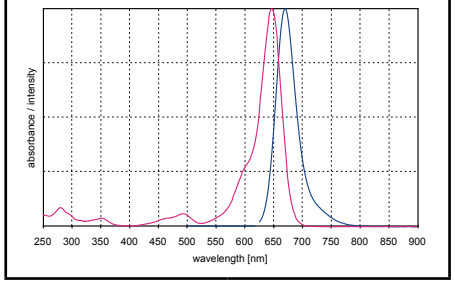
Absorption/emission max.:
647 nm / 670 nm (in Ethanol)

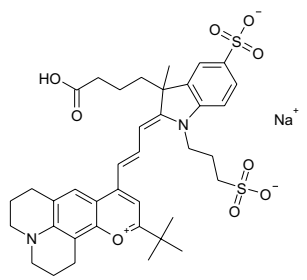
Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

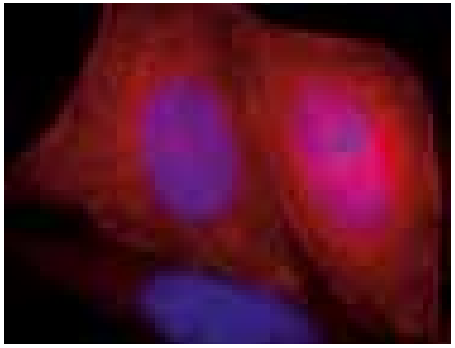


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	760.91	$C_{38}H_{45}N_2O_9S_2 * Na$	636-00
NHS-ester	857.98	$C_{42}H_{48}N_3O_{11}S_2 * Na$	636-01
Amino-derivative	781.01	$C_{40}H_{52}N_4O_8S_2$	636-02
Maleimide	883.04	$C_{44}H_{51}N_4O_{10}S_2 * Na$	636-03





DY-647



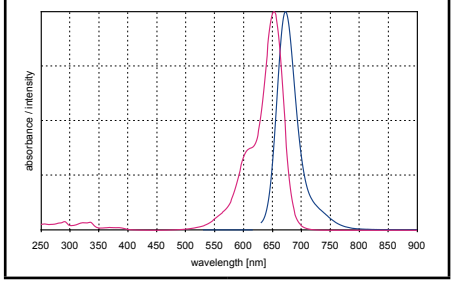
Absorption/emission max.:
653 nm / 673 nm (in Ethanol)

Molar absorbance:
250,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	664.78	$C_{32}H_{37}N_2O_8S_2 * Na$	647-00
NHS-ester	761.85	$C_{36}H_{40}N_3O_{10}S_2 * Na$	647-01
Amino-derivative	684.88	$C_{34}H_{44}N_4O_7S_2$	647-02
Maleimide	786.91	$C_{38}H_{43}N_4O_9S_2 * Na$	647-03

Structure on request

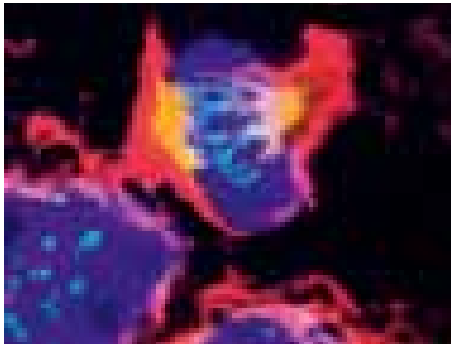


DY-648

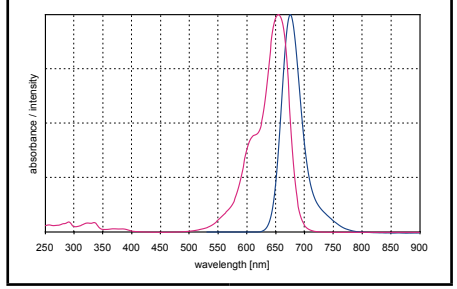
Absorption/emission max.:
655 nm / 676 nm (in Ethanol)

Molar absorbance:
250,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO

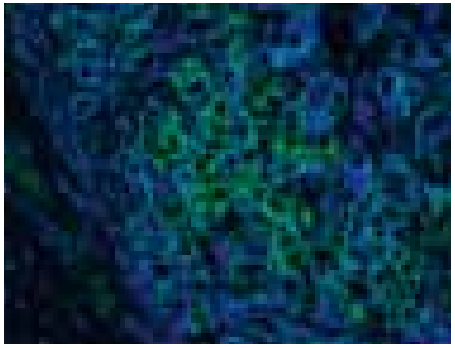


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	780.85	$C_{33}H_{38}N_2O_{11}S_3 * 2\ Na$	648-00
NHS-ester	877.92	$C_{37}H_{41}N_3O_{13}S_3 * 2\ Na$	648-01
Amino-derivative	800.95	$C_{35}H_{45}N_4O_{10}S_3 * Na$	648-02
Maleimide	902.98	$C_{39}H_{44}N_4O_{12}S_3 * 2\ Na$	648-03



Structure on request

DY-649



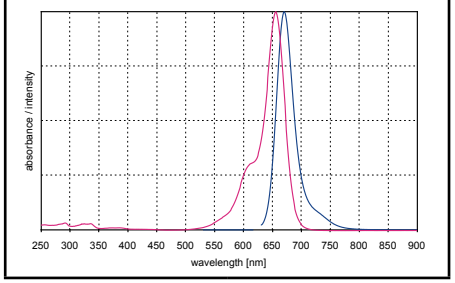
Absorption/emission max.:
656 nm / 670 nm (in Ethanol)

Molar absorbance:
250,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol
- very hydrophilic
- three negative charges
- usually combined with DY-549

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	910.95	$C_{35}H_{41}N_2O_{14}S_4$ * 3 Na	649-00
NHS-ester	1008.02	$C_{39}H_{44}N_3O_{16}S_4$ * 3 Na	649-01
Amino-derivative	931.05	$C_{37}H_{48}N_4O_{13}S_4$ * 2 Na	649-02
Maleimide	1033.08	$C_{41}H_{47}N_4O_{15}S_4$ * 3 Na	649-03

Structure on request

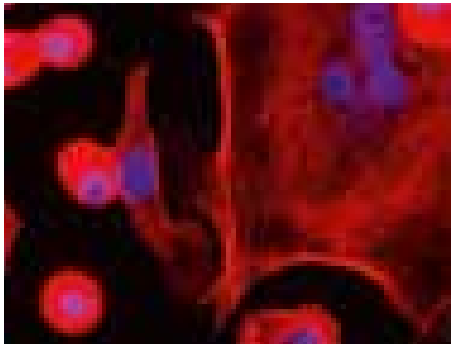


DY-649P1

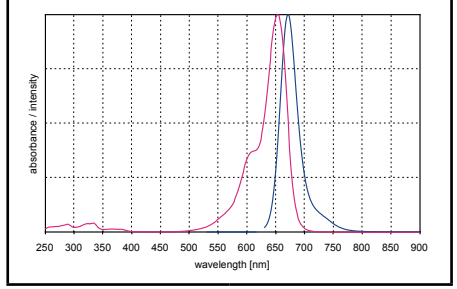
Absorption/emission max.:
654 nm / 672 nm (in Ethanol)

Molar absorbance:
250,000 $M^{-1}cm^{-1}$

Comments:
- replacement / alternative to DY-649

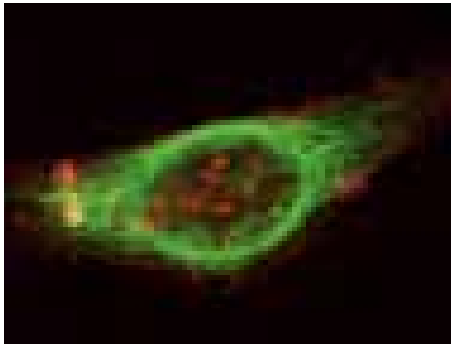


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	969.03	$C_{38}H_{47}N_2O_{15}S_4$ * 3 Na	649P1-00
NHS-ester	1066.10	$C_{42}H_{50}N_3O_{17}S_4$ * 3 Na	649P1-01
Amino-derivative	989.13	$C_{40}H_{54}N_4O_{14}S_4$ * 2 Na	649P1-02
Maleimide	1091.16	$C_{44}H_{53}N_4O_{16}S_4$ * 3 Na	649P1-03



Structure on request

DY-650

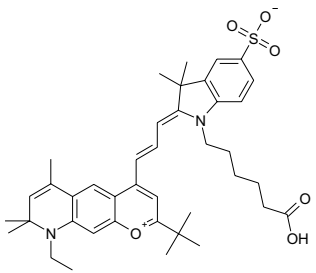


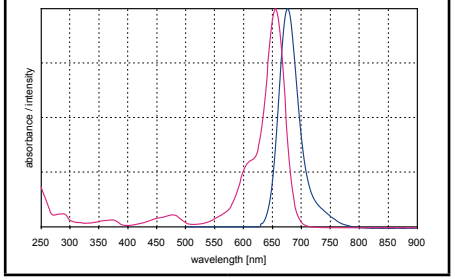
Absorption/emission max.:
656 nm / 676 nm (in Ethanol)

Molar absorbance:
220,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	686.92	$C_{40}H_{50}N_2O_6S$	650-00
NHS-ester	783.99	$C_{44}H_{53}N_3O_8S$	650-01
Amino-derivative	765.46	$C_{42}H_{57}N_4O_5S * Cl$	650-02
Maleimide	809.05	$C_{46}H_{56}N_4O_7S$	650-03



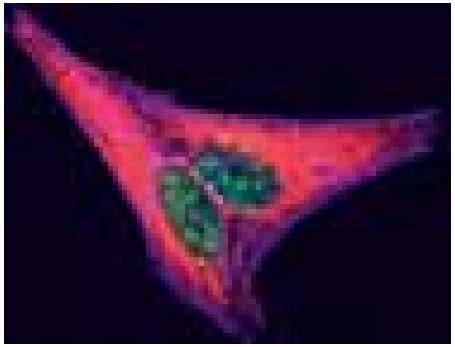


DY-651

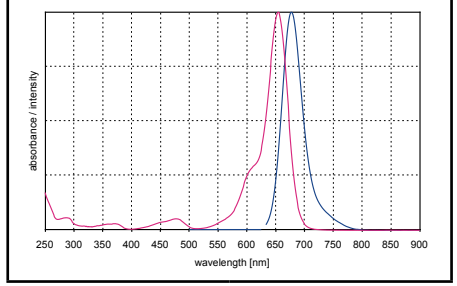
Absorption/emission max.:
655 nm / 677 nm (in Ethanol)

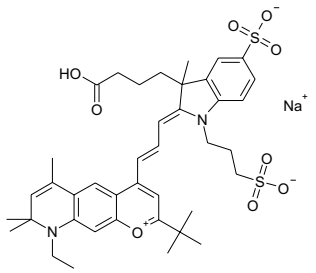
Molar absorbance:
220,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

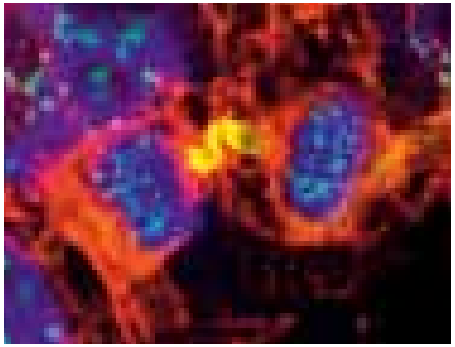


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	788.96	$C_{40}H_{49}N_2O_9S_2 * Na$	651-00
NHS-ester	886.04	$C_{44}H_{52}N_3O_{11}S_2 * Na$	651-01
Amino-derivative	809.06	$C_{42}H_{56}N_4O_8S_2$	651-02
Maleimide	911.09	$C_{46}H_{55}N_4O_{10}S_2 * Na$	651-03





DY-652

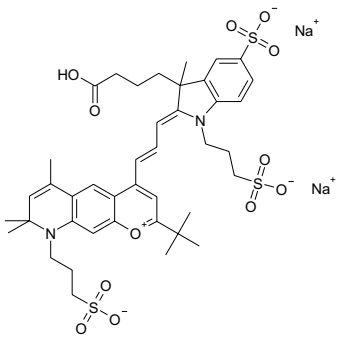


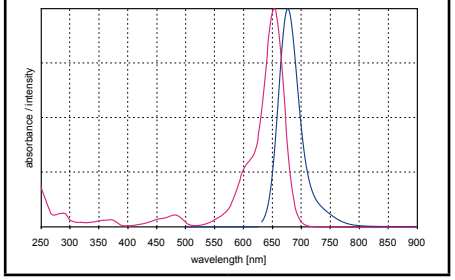
Absorption/emission max.:
653 nm / 676 nm (in Ethanol)

Molar absorbance:
220,000 $M^{-1}cm^{-1}$

Comments:
– soluble in methanol, ethanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	905.03	$C_{41}H_{50}N_2O_{12}S_3$ * 2 Na	652-00
NHS-ester	1002.11	$C_{45}H_{53}N_3O_{14}S_3$ * 2 Na	652-01
Amino-derivative	925.13	$C_{43}H_{57}N_4O_{11}S_3$ * Na	652-02
Maleimide	1027.16	$C_{47}H_{56}N_4O_{13}S_3$ * 2 Na	652-03



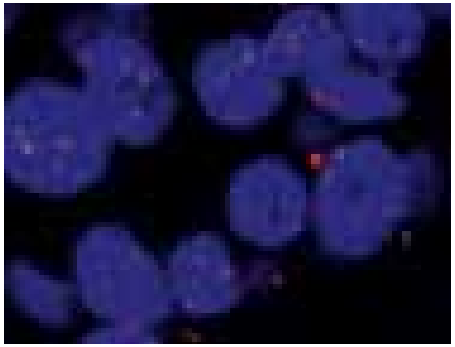


DY-654

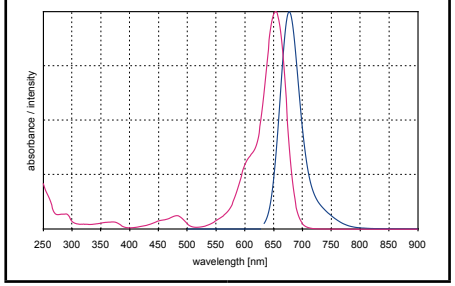
Absorption/emission max.:
653 nm / 677 nm (in Ethanol)

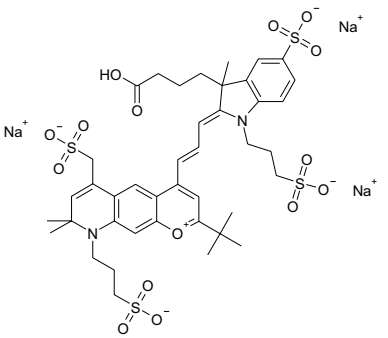
Molar absorbance:
220,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF



Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	1007.08	$C_{41}H_{49}N_2O_{15}S_4$ * 3 Na	654-00
NHS-ester	1102.14	$C_{45}H_{50}N_3O_{17}S_4$ * 3 Na	654-01
Amino-derivative	1027.18	$C_{43}H_{56}N_4O_{14}S_4$ * 2 Na	654-02
Maleimide	1129.21	$C_{47}H_{55}N_4O_{16}S_4$ * 3 Na	654-03





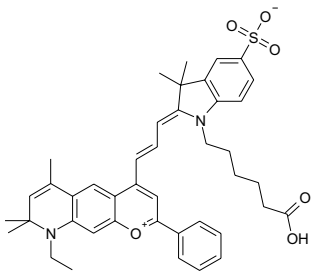
DY-675

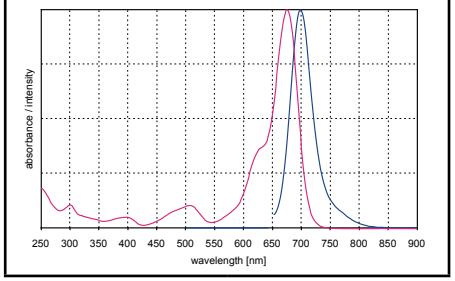
Absorption/emission max.:
675 nm / 699 nm (in Ethanol)

Molar absorbance:
180,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	706.91	$C_{42}H_{46}N_2O_6S$	675-00
NHS-ester	803.98	$C_{46}H_{49}N_3O_8S$	675-01
Amino-derivative	785.45	$C_{44}H_{53}N_4O_5S * Cl$	675-02
Maleimide	829.04	$C_{48}H_{52}N_4O_7S$	675-03



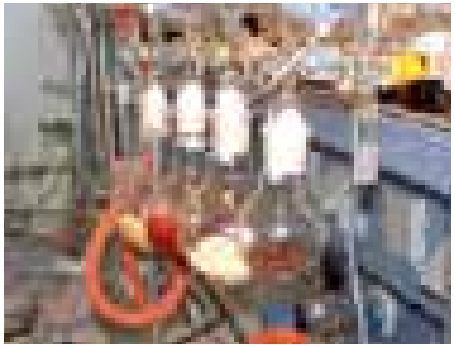


DY-676

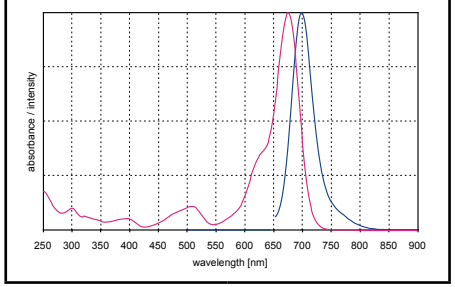
Absorption/emission max.:
675 nm / 699 nm (in Ethanol)

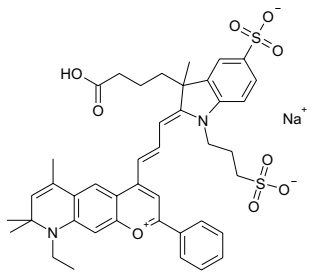
Molar absorbance:
180,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis



Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	808.95	$C_{42}H_{45}N_2O_9S_2 * Na$	676-00
NHS-ester	906.02	$C_{46}H_{48}N_3O_{11}S_2 * Na$	676-01
Amino-derivative	829.06	$C_{44}H_{52}N_4O_8S_2$	676-02
Maleimide	931.08	$C_{48}H_{51}N_4O_{10}S_2 * Na$	676-03





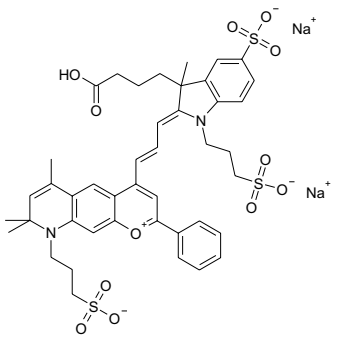
DY-677

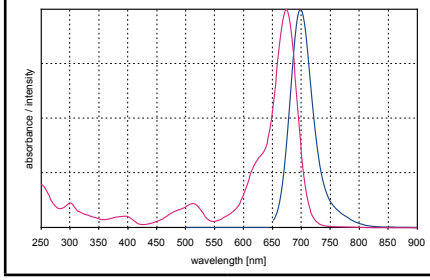
Absorption/emission max.:
674 nm / 698 nm (in Ethanol)

Molar absorbance:
180,000 $M^{-1}cm^{-1}$

Comments:
– soluble in methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	925.02	$C_{43}H_{46}N_2O_{12}S_3$ * 2 Na	677-00
NHS-ester	1022.10	$C_{47}H_{49}N_3O_{14}S_3$ * 2 Na	677-01
Amino-derivative	945.12	$C_{45}H_{53}N_4O_{11}S_3$ * Na	677-02
Maleimide	1047.15	$C_{49}H_{52}N_4O_{13}S_3$ * 2 Na	677-03



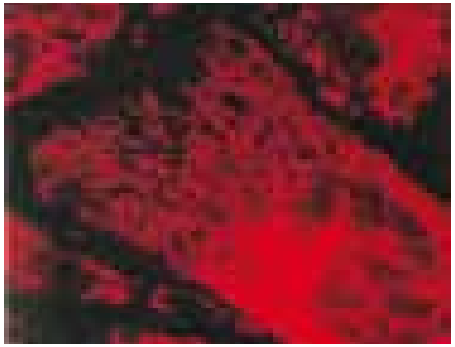


DY-678

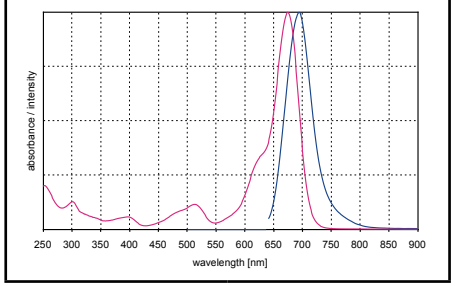
Absorption/emission max.:
674 nm / 694 nm (in Ethanol)

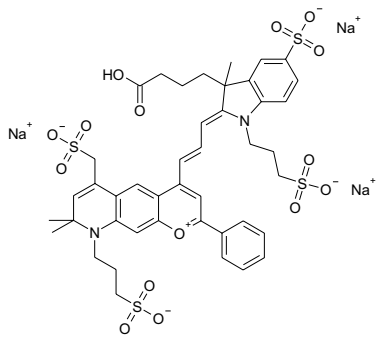
Molar absorbance:
180,000 $M^{-1}cm^{-1}$

Comments:
– very hydrophilic

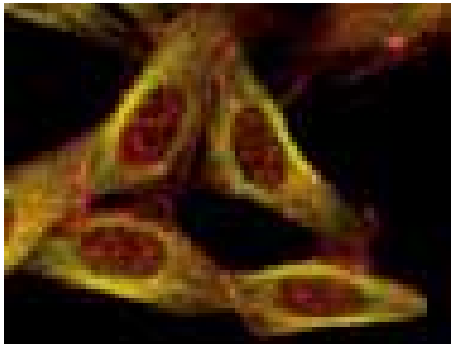


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	1027.07	$C_{43}H_{44}N_2O_{15}S_4$ * 3 Na	678-00
NHS-ester	1124.14	$C_{47}H_{48}N_3O_{17}S_4$ * 3 Na	678-01
Amino-derivative	1047.17	$C_{45}H_{51}N_4O_{14}S_4$ * 2 Na	678-02
Maleimide	1149.30	$C_{49}H_{50}N_4O_{16}S_4$ * 3 Na	678-03





DY-679



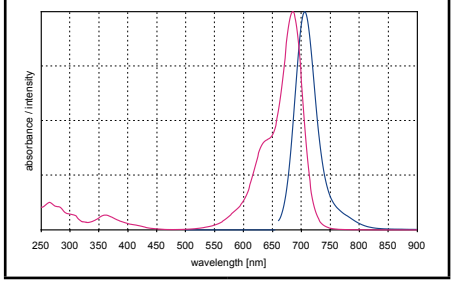
Absorption/emission max.:
679 nm / 698 nm (in PBS)

Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF-water-mixtures

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	1099.09	$C_{42}H_{42}N_2O_{17}S_5 * 4\ Na$	679-00
NHS-ester	1196.16	$C_{46}H_{45}N_3O_{19}S_5 * 4\ Na$	679-01
Amino-derivative	1119.19	$C_{44}H_{49}N_4O_{16}S_5 * 3\ Na$	679-02
Maleimide	1221.21	$C_{48}H_{48}N_4O_{18}S_5 * 4\ Na$	679-03

Structure on request

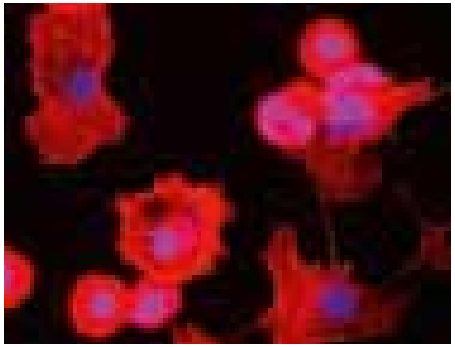


DY-679P1

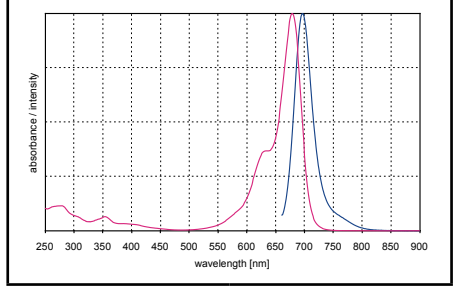
Absorption/emission max.:
679 nm / 697 nm (in PBS)

Molar absorbance:
200,000 $M^{-1}cm^{-1}$

Comments:
– alternative to DY-679

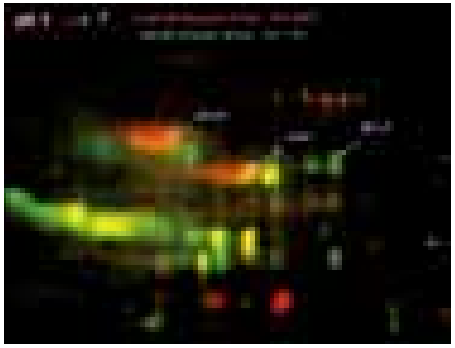


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	1143.14	$C_{44}H_{46}N_2O_{18}S_5 * 4\ Na$	679P1-00
NHS-ester	1240.21	$C_{48}H_{49}N_3O_{20}S_5 * 4\ Na$	679P1-01
Amino-derivative	1163.24	$C_{46}H_{53}N_4O_{17}S_5 * 3\ Na$	679P1-02
Maleimide	1265.27	$C_{50}H_{52}N_4O_{19}S_5 * 4\ Na$	679P1-03



Structure on request

DY-680

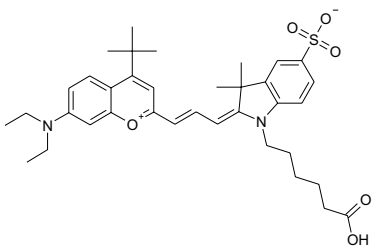


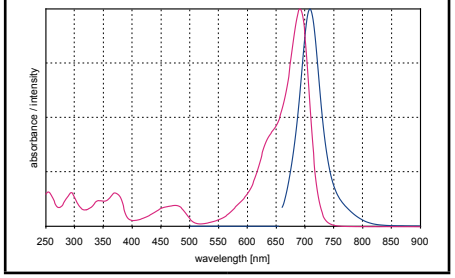
Absorption/emission max.:
691 nm / 709 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	634.84	$C_{36}H_{46}N_2O_6S$	680-00
NHS-ester	731.92	$C_{40}H_{49}N_3O_8S$	680-01
Amino-derivative	713.38	$C_{38}H_{53}N_4O_5S * Cl$	680-02
Maleimide	756.97	$C_{42}H_{52}N_4O_7S$	680-03





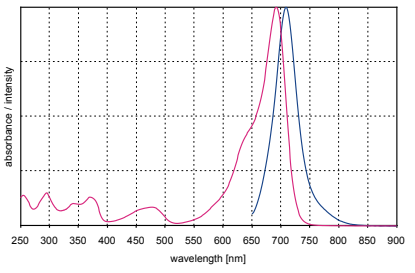
DY-681

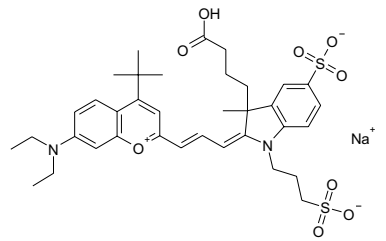
Absorption/emission max.:
692 nm / 709 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	736.88	$C_{36}H_{45}N_2O_9S_2 * Na$	681-00
NHS-ester	833.95	$C_{40}H_{48}N_3O_{11}S_2 * Na$	681-01
Amino-derivative	756.99	$C_{38}H_{52}N_4O_8S_2$	681-02
Maleimide	859.01	$C_{42}H_{51}N_4O_{10}S_2 * Na$	681-03





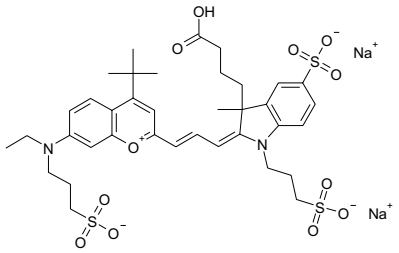
DY-682

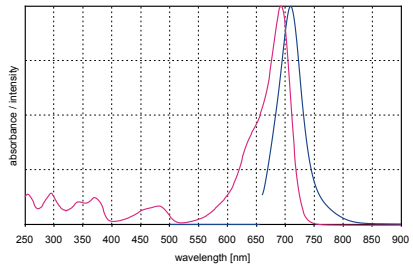
Absorption/emission max.:
692 nm / 709 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	852.96	$C_{37}H_{46}N_2O_{12}S_3$ * 2 Na	682-00
NHS-ester	950.03	$C_{41}H_{49}N_3O_{14}S_2$ * 2 Na	682-01
Amino-derivative	873.06	$C_{39}H_{53}N_4O_{11}S_3$ * Na	682-02
Maleimide	975.08	$C_{43}H_{52}N_4O_{13}S_3$ * 2 Na	682-03





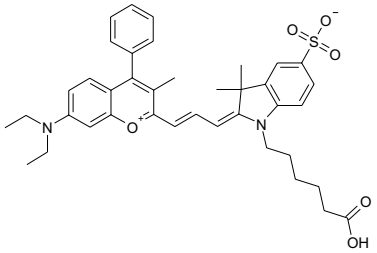
DY-700

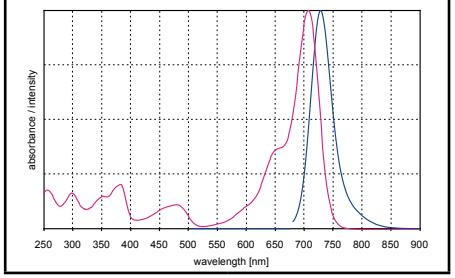
Absorption/emission max.:
707 nm / 728 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	668.86	$C_{39}H_{44}N_2O_6S$	700-00
NHS-ester	765.93	$C_{43}H_{47}N_3O_8S$	700-01
Amino-derivative	747.40	$C_{41}H_{51}N_4O_5S * Cl$	700-02
Maleimide	790.99	$C_{45}H_{50}N_4O_7S$	700-03





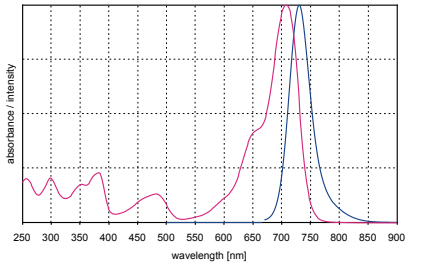
DY-701

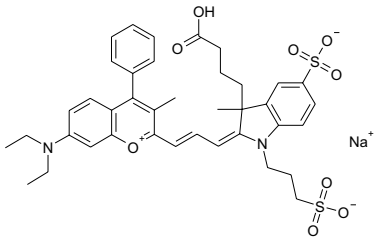
Absorption/emission max.:
709 nm / 730 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

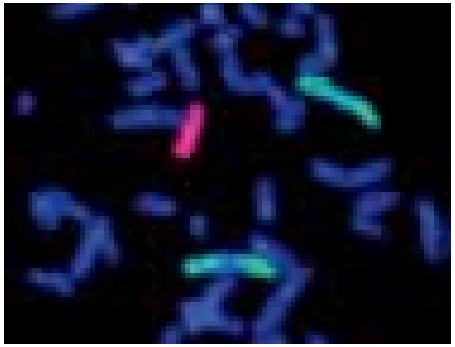
Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	770.90	$C_{39}H_{43}N_2O_9S_2 * Na$	701-00
NHS-ester	867.97	$C_{43}H_{46}N_3O_{11}S_2 * Na$	701-01
Amino-derivative	791.01	$C_{41}H_{50}N_4O_8S_2$	701-02
Maleimide	893.03	$C_{45}H_{49}N_4O_{10}S_2 * Na$	701-03





DY-703

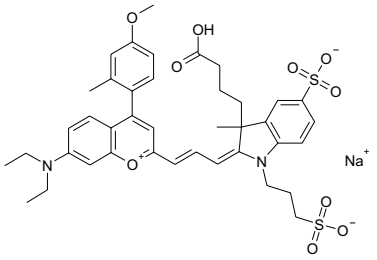


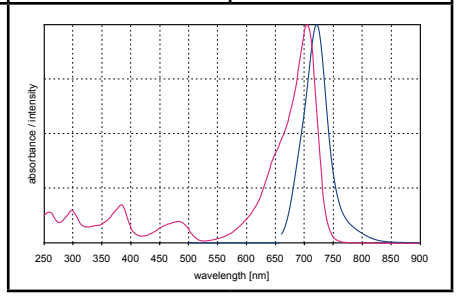
Absorption/emission max.:
705 nm / 721 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, ethanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	800.93	$C_{40}H_{45}N_2O_{10}S_2$ * Na	703-00
NHS-ester	898.00	$C_{44}H_{48}N_3O_{12}S_2$ * Na	703-01
Amino-derivative	821.03	$C_{42}H_{52}N_4O_9S_2$	703-02
Maleimide	923.06	$C_{46}H_{51}N_4O_{11}S_2$ * Na	703-03



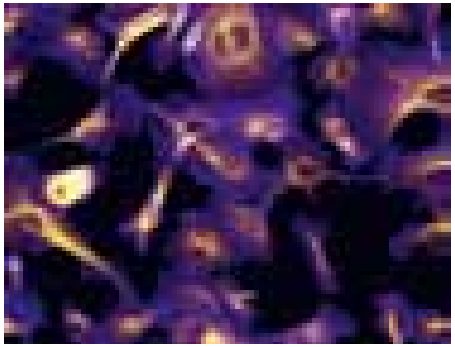


DY-704

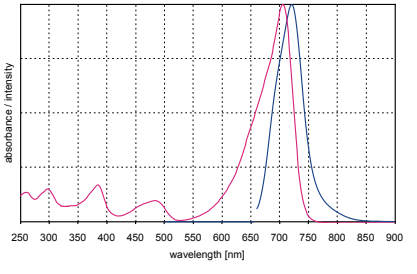
Absorption/emission max.:
706 nm / 721 nm (in Ethanol)

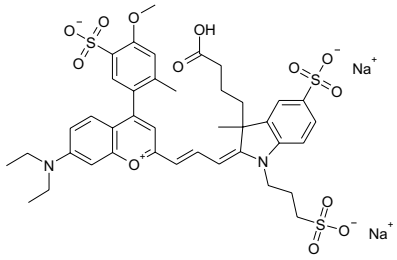
Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
– very hydrophilic



Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	902.97	$C_{40}H_{44}N_2O_{13}S_3$ * 2 Na	704-00
NHS-ester	1000.05	$C_{44}H_{47}N_3O_{15}S_3$ * 2 Na	704-01
Amino-derivative	923.07	$C_{42}H_{51}N_4O_{12}S_3$ * Na	704-02
Maleimide	1025.10	$C_{46}H_{50}N_4O_{14}S_3$ * 2 Na	704-03





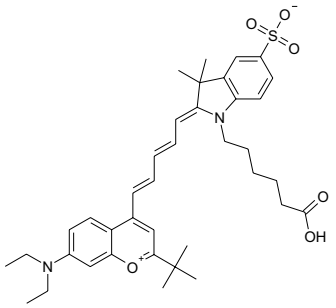
DY-730

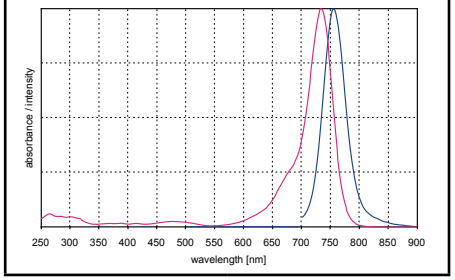
Absorption/emission max.:
734 nm / 755 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	660.88	$C_{38}H_{48}N_2O_6S$	730-00
NHS-ester	757.96	$C_{42}H_{51}N_3O_8S$	730-01
Amino-derivative	739.42	$C_{40}H_{55}N_4O_5S$ * Cl	730-02
Maleimide	783.01	$C_{44}H_{54}N_4O_7S$	730-03





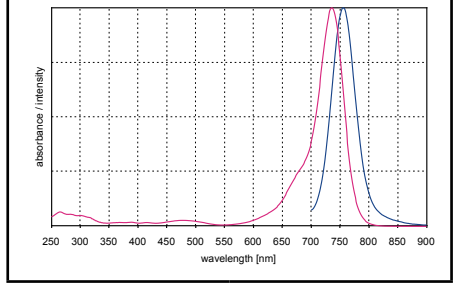
DY-731

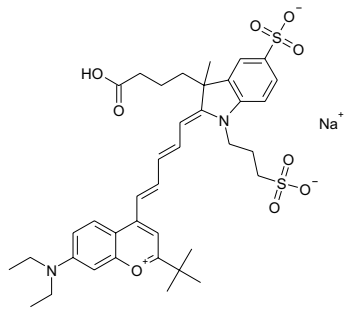
Absorption/emission max.:
736 nm / 755 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	762.92	$C_{38}H_{47}N_2O_9S_2$ * Na	731-00
NHS-ester	859.99	$C_{42}H_{50}N_3O_{11}S_2$ * Na	731-01
Amino-derivative	783.03	$C_{40}H_{54}N_4O_8S_2$	731-02
Maleimide	885.05	$C_{44}H_{53}N_4O_{10}S_2$ * Na	731-03





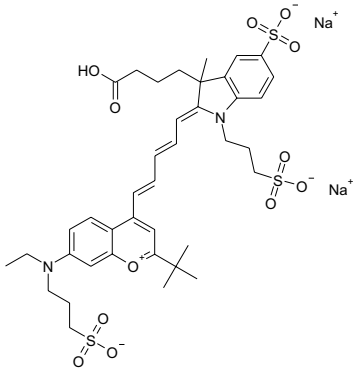
DY-732

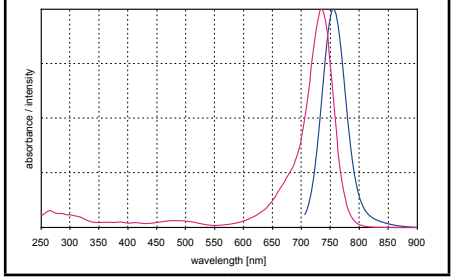
Absorption/emission max.:
735 nm / 756 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	879.00	$C_{39}H_{48}N_2O_{12}S_3$ * 2 Na	732-00
NHS-ester	976.07	$C_{43}H_{51}N_3O_{14}S_3$ * 2 Na	732-01
Amino-derivative	899.10	$C_{41}H_{55}N_4O_{11}S_3$ * Na	732-02
Maleimide	1001.12	$C_{45}H_{54}N_4O_{13}S_3$ * 2 Na	732-03





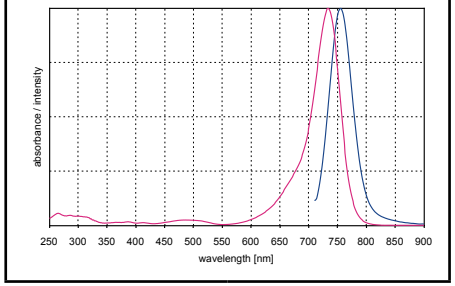
DY-734

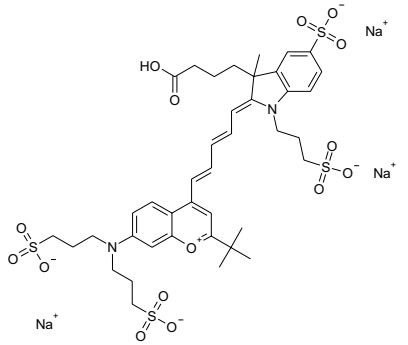
Absorption/emission max.:
733 nm / 755 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

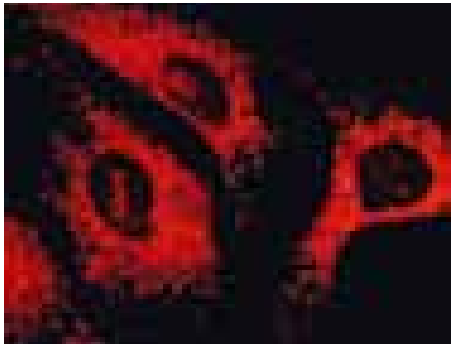
Comments:
- soluble in water, methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	995.07	$C_{40}H_{49}N_2O_{15}S_4$ * 3 Na	734-00
NHS-ester	1092.14	$C_{44}H_{52}N_3O_{17}S_4$ * 3 Na	734-01
Amino-derivative	1015.19	$C_{42}H_{56}N_4O_{14}S_4$ * 2 Na	734-02
Maleimide	1117.19	$C_{46}H_{55}N_4O_{16}S_4$ * 3 Na	734-03





DY-749



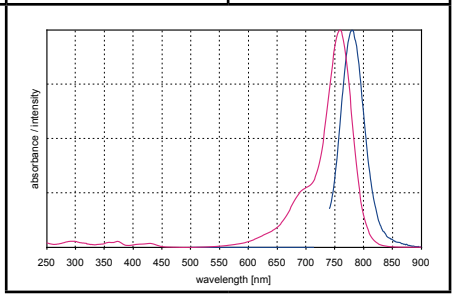
Absorption/emission max.:
759 nm / 780 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

Comments:
– very hydrophilic

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	936.99	$C_{37}H_{43}N_2O_{14}S_4$ * 3 Na	749-00
NHS-ester	1034.06	$C_{41}H_{46}N_3O_{16}S_4$ * 3 Na	749-01
Amino-derivative	957.09	$C_{39}H_{50}N_4O_{13}S_4$ * 2 Na	749-02
Maleimide	1059.11	$C_{43}H_{49}N_4O_{15}S_4$ * 3 Na	749-03

Structure on request



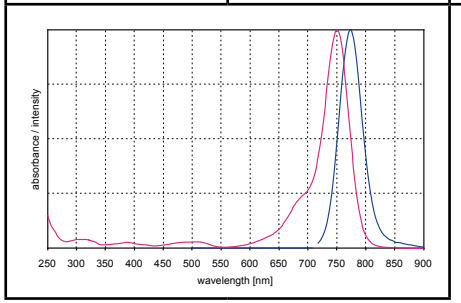
DY-750

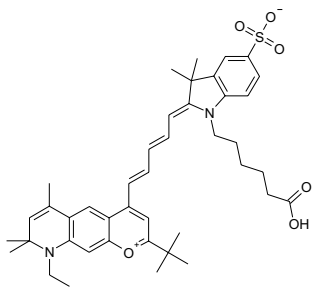
Absorption/emission max.:
751 nm / 774 nm (in Ethanol)

Molar absorbance:
270,000 $M^{-1}cm^{-1}$

Comments:
– soluble in methanol, ethanol, DMF, DMSO
– bright solid state emission
– suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	712.96	$C_{42}H_{52}N_2O_6S$	750-00
NHS-ester	810.03	$C_{46}H_{55}N_3O_8S$	750-01
Amino-derivative	791.49	$C_{44}H_{59}N_4O_5S$ * Cl	750-02
Maleimide	835.08	$C_{48}H_{58}N_4O_7S$	750-03





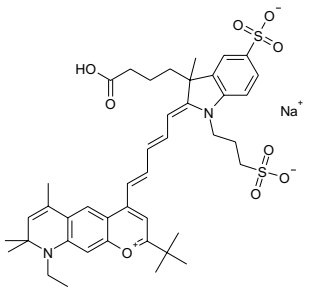
DY-751

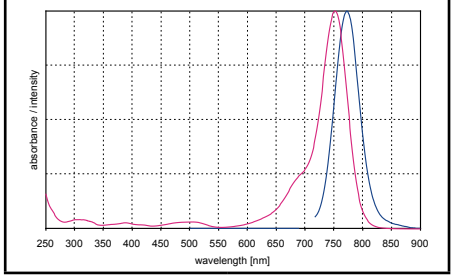
Absorption/emission max.:
752 nm / 772 nm (in Ethanol)

Molar absorbance:
270,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	814.99	$C_{42}H_{51}N_2O_9S_2$ * Na	751-00
NHS-ester	912.07	$C_{46}H_{54}N_3O_{11}S_2$ * Na	751-01
Amino-derivative	835.10	$C_{44}H_{58}N_4O_8S_2$	751-02
Maleimide	937.13	$C_{48}H_{57}N_4O_{10}S_2$ * Na	751-03





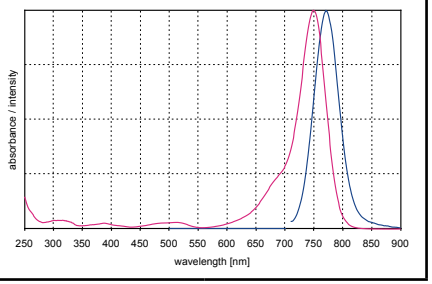
DY-752

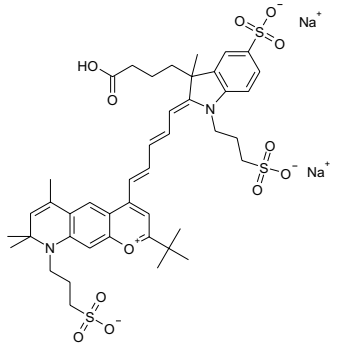
Absorption/emission max.:
750 nm / 771 nm (in Ethanol)

Molar absorbance:
270,000 $M^{-1}cm^{-1}$

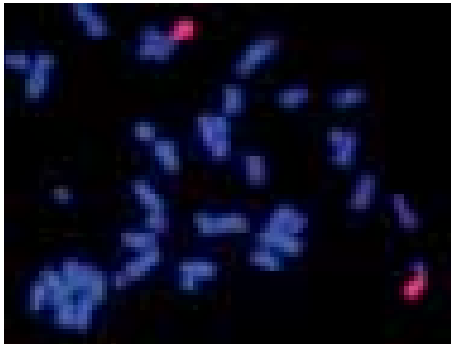
Comments:
- soluble in water, methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	931.07	$C_{43}H_{52}N_2O_{12}S_3$ * 2 Na	752-00
NHS-ester	1028.15	$C_{47}H_{55}N_3O_{14}S_3$ * 2 Na	752-01
Amino-derivative	951.17	$C_{45}H_{59}N_4O_{11}S_3$ * Na	752-02
Maleimide	1053.20	$C_{49}H_{58}N_4O_{13}S_3$ * 2 Na	752-03





DY-754

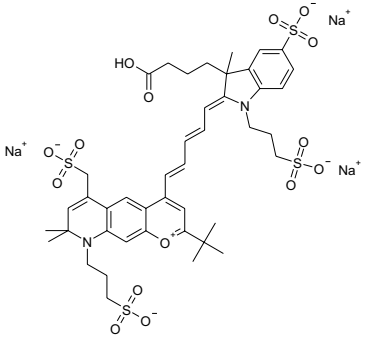


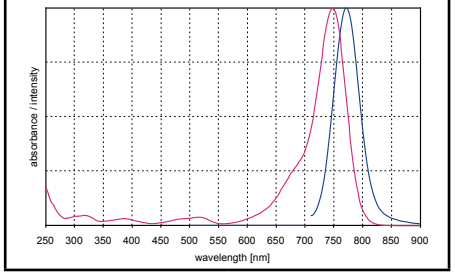
Absorption/emission max.:
748 nm / 771 nm (in Ethanol)

Molar absorbance:
270,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	1033.12	$C_{43}H_{51}N_2O_{15}S_4$ * 3 Na	754-00
NHS-ester	1130.19	$C_{47}H_{54}N_3O_{17}S_4$ * 3 Na	754-01
Amino-derivative	1053.22	$C_{45}H_{58}N_4O_{14}S_4$ * 2 Na	754-02
Maleimide	1155.25	$C_{49}H_{57}N_4O_{16}S_4$ * 3 Na	754-03





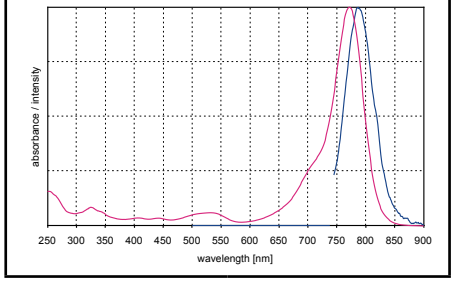
DY-776

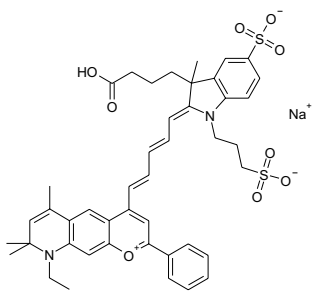
Absorption/emission max.:
772 nm / 787 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

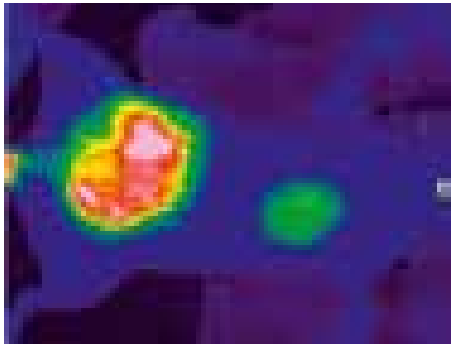
Comments:
– soluble in water, methanol, DMF, DMSO
– bright solid state emission
– suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	834.98	$C_{44}H_{47}N_2O_9S_2$ * Na	776-00
NHS-ester	932.07	$C_{48}H_{50}N_3O_{11}S_2$ * Na	776-01
Amino-derivative	855.09	$C_{46}H_{54}N_4O_8S_2$	776-02
Maleimide	957.12	$C_{50}H_{53}N_4O_{10}S_2$ * Na	776-03





DY-777

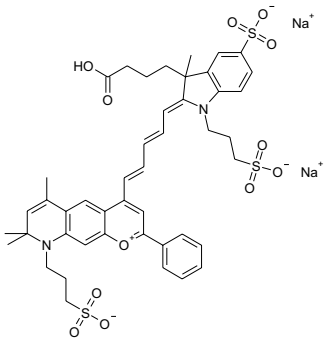


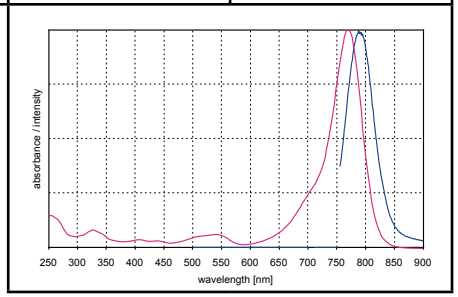
Absorption/emission max.:
770 nm / 788 nm (in Ethanol)

Molar absorbance:
240,000 $M^{-1}cm^{-1}$

Comments:
– hydrophilic

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	951.06	$C_{45}H_{48}N_2O_{12}S_3$ * 2 Na	777-00
NHS-ester	1048.14	$C_{49}H_{51}N_3O_{14}S_3$ * 2 Na	777-01
Amino-derivative	971.16	$C_{47}H_{55}N_4O_{11}S_3$ * Na	777-02
Maleimide	1073.19	$C_{51}H_{54}N_4O_{13}S_3$ * 2 Na	777-03



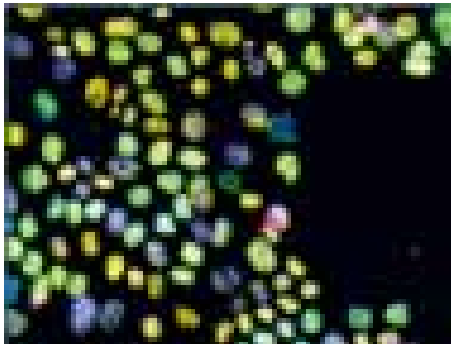


DY-778

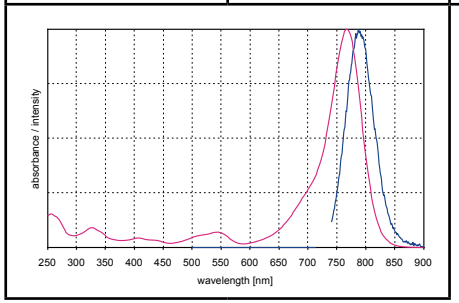
Absorption/emission max.:
767 nm / 787 nm (in Ethanol)

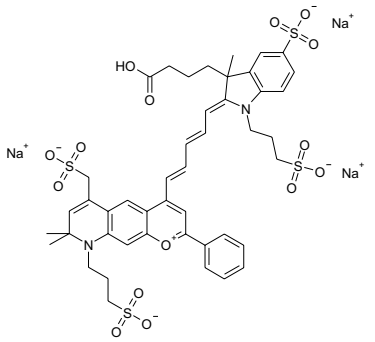
Molar absorbance:
240,000 $M^{-1}cm^{-1}$

Comments:
– very hydrophilic

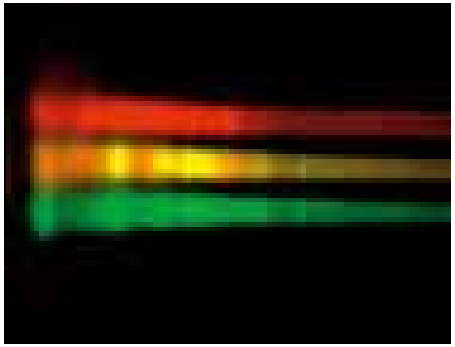


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	1053.11	$C_{45}H_{47}N_2O_{15}S_4$ * 3 Na	778-00
NHS-ester	1150.18	$C_{49}H_{50}N_3O_{17}S_4$ * 3 Na	778-01
Amino-derivative	1073.21	$C_{47}H_{54}N_4O_{14}S_4$ * 2 Na	778-02
Maleimide	1175.24	$C_{51}H_{53}N_4O_{16}S_4$ * 3 Na	778-03





DY-780

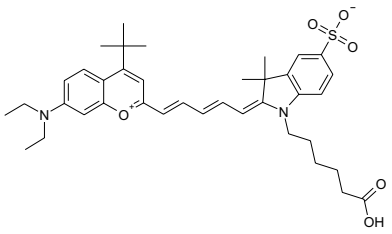


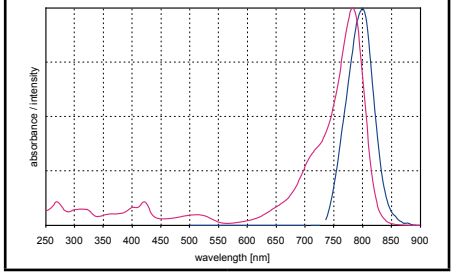
Absorption/emission max.:
783 nm / 799 nm (in Ethanol)

Molar absorbance:
170,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	660.88	$C_{38}H_{48}N_2O_6S$	780-00
NHS-ester	757.95	$C_{42}H_{51}N_3O_8S$	780-01
Amino-derivative	739.42	$C_{40}H_{55}N_4O_5S * Cl$	780-02
Maleimide	783.01	$C_{44}H_{54}N_4O_7S$	780-03





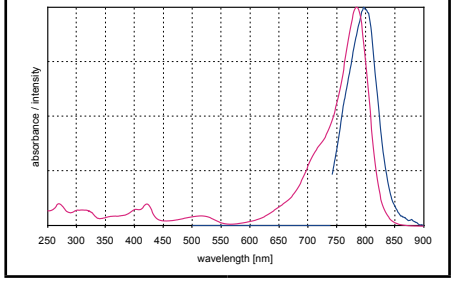
DY-781

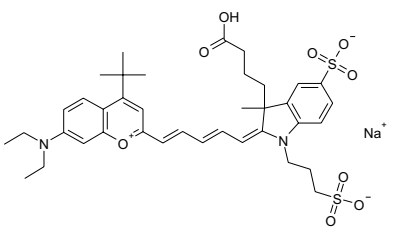
Absorption/emission max.:
784 nm / 796 nm (in Ethanol)

Molar absorbance:
170,000 $M^{-1}cm^{-1}$

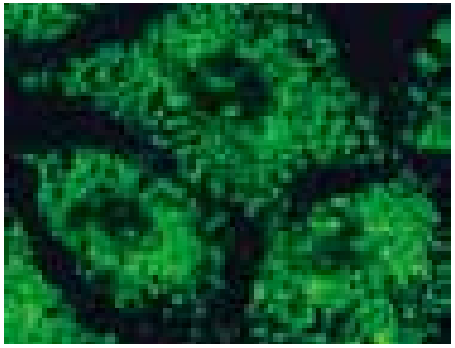
Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	762.92	$C_{38}H_{47}N_2O_9S_2 * Na$	781-00
NHS-ester	860.00	$C_{42}H_{50}N_3O_{11}S_2 * Na$	781-01
Amino-derivative	783.03	$C_{40}H_{54}N_4O_8S_2$	781-02
Maleimide	885.05	$C_{44}H_{53}N_4O_{10}S_2 * Na$	781-03





DY-782

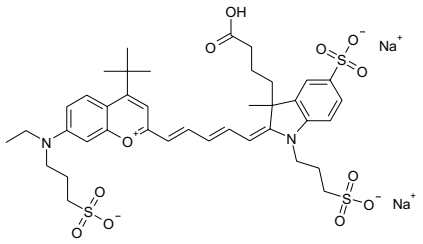


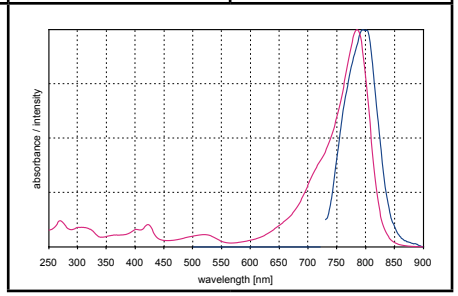
Absorption/emission max.:
785 nm / 794 nm (in Ethanol)

Molar absorbance:
170,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol
– two negative charges
– enhanced water solubility and polarity

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	879.00	$C_{39}H_{48}N_2O_{12}S_3$ * 2 Na	782-00
NHS-ester	976.07	$C_{43}H_{51}N_3O_{14}S_3$ * 2 Na	782-01
Amino-derivative	899.10	$C_{41}H_{55}N_4O_{11}S_3$ * Na	782-02
Maleimide	1001.12	$C_{45}H_{54}N_4O_{13}S_3$ * 2 Na	782-03



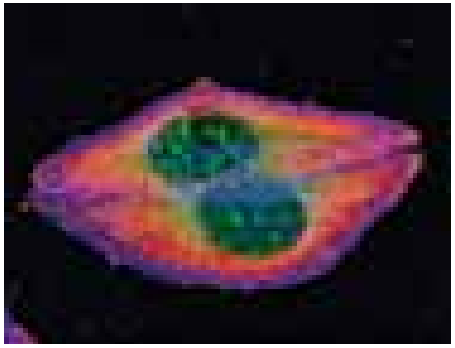


DY-800

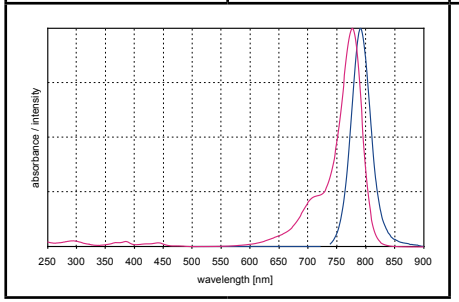
Absorption/emission max.:
777 nm / 791 nm (in Ethanol)

Molar absorbance:
280,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF
– hydrophilic



Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	953.08	$C_{45}H_{50}N_2O_{12}S_3$ * 2 Na	800-00
NHS-ester	1050.15	$C_{49}H_{53}N_3O_{14}S_3$ * 2 Na	800-01
Amino-derivative	973.18	$C_{47}H_{57}N_4O_{11}S_3$ * Na	800-02
Maleimide	1075.21	$C_{51}H_{56}N_4O_{13}S_3$ * 2 Na	800-03



Structure on request

Label

NIR-excitation

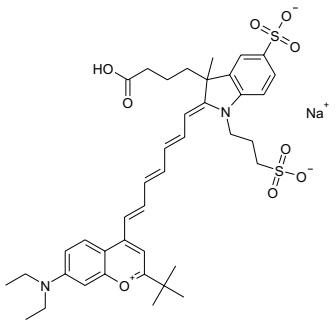
DY-831

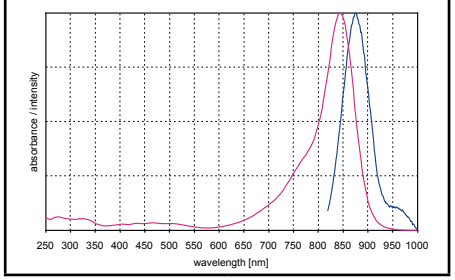
Absorption/emission max.:
844 nm / 875 nm (in Ethanol)

Molar absorbance:
220,000 $M^{-1}cm^{-1}$

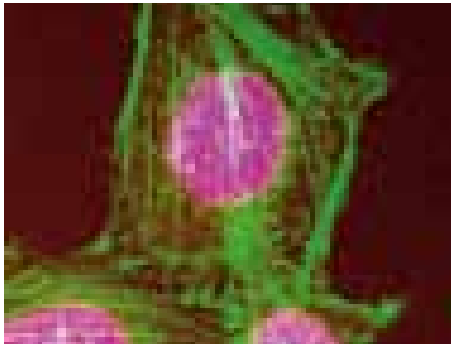
Comments:
– soluble in water, methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	788.96	$C_{40}H_{49}N_2O_9S_2$ * Na	831-00
NHS-ester	886.04	$C_{44}H_{52}N_3O_{11}S_2$ * Na	831-01
Amino-derivative	809.06	$C_{42}H_{56}N_4O_8S_2$	831-02
Maleimide	911.09	$C_{46}H_{55}N_4O_{10}S_2$ * Na	831-03





DY-480XL

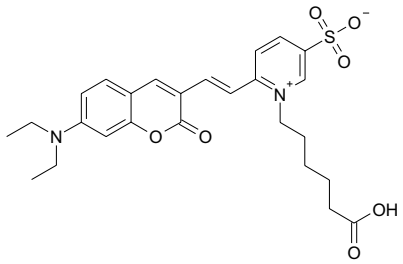


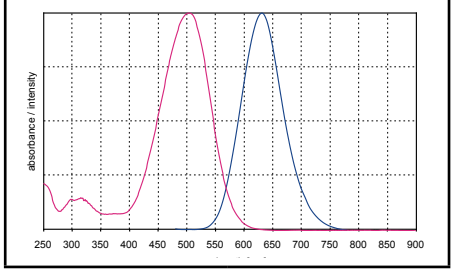
Absorption/emission max.:
504 nm / 631 nm (in Ethanol)

Molar absorbance:
50,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	514.60	$C_{26}H_{30}N_2O_7S$	480XL-00
NHS-ester	611.68	$C_{30}H_{33}N_3O_9S$	480XL-01
Amino-derivative	593.14	$C_{28}H_{37}N_4O_6S * Cl$	480XL-02
Maleimide	636.73	$C_{32}H_{36}N_4O_8S$	480XL-03



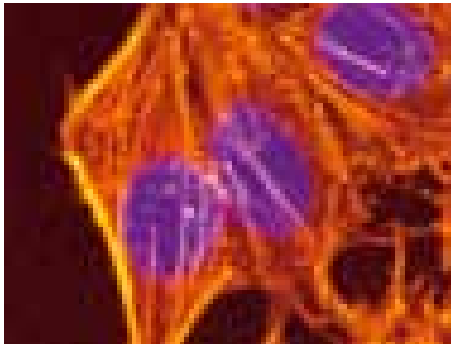


DY-481XL

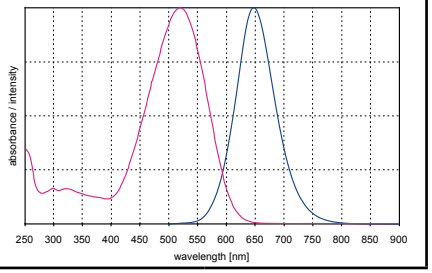
Absorption/emission max.:
519 nm / 648 nm (in Ethanol)

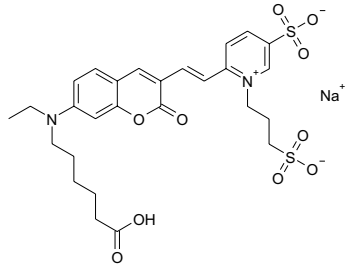
Molar absorbance:
50,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, ethanol, DMF, DMSO



Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	630.67	$C_{27}H_{31}N_2O_{10}S_2 * Na$	481XL-00
NHS-ester	727.75	$C_{31}H_{34}N_3O_{12}S_2 * Na$	481XL-01
Amino-derivative	650.78	$C_{29}H_{38}N_4O_9S_2$	481XL-02
Maleimide	752.80	$C_{33}H_{37}N_4O_{11}S_2 * Na$	481XL-03





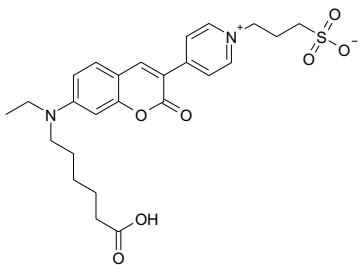
DY-485XL

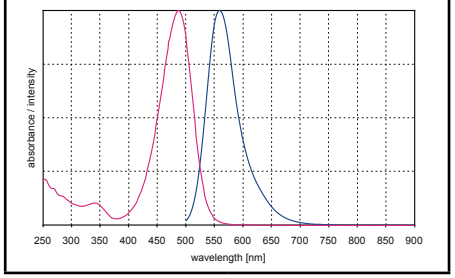
Absorption/emission max.:
488 nm / 559 nm (in Ethanol)

Molar absorbance:
50,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	502.59	$C_{25}H_{30}N_2O_7S$	485XL-00
NHS-ester	599.67	$C_{29}H_{33}N_3O_9S$	485XL-01
Amino-derivative	581.13	$C_{27}H_{37}N_4O_6S * Cl$	485XL-02
Maleimide	624.72	$C_{31}H_{36}N_4O_8S$	485XL-03



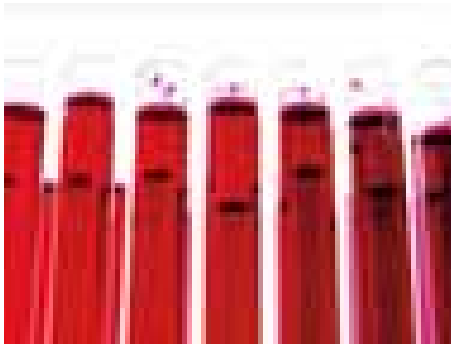


DY-510XL

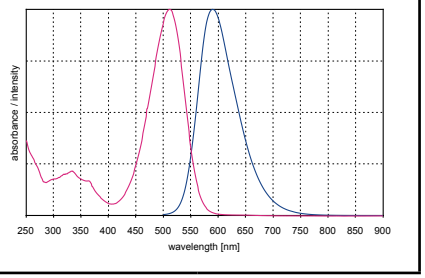
Absorption/emission max.:
509 nm / 590 nm (in Ethanol)

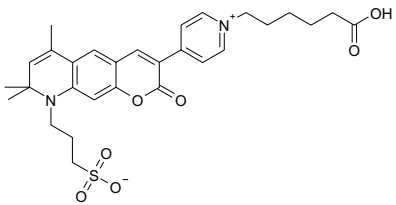
Molar absorbance:
50,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

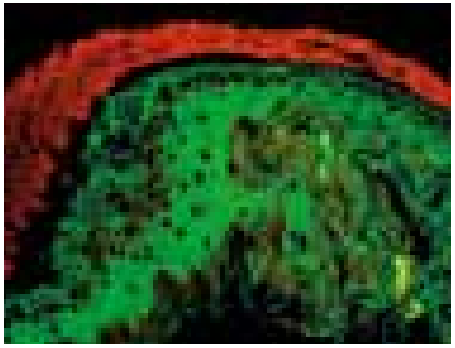


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	554.67	$C_{29}H_{34}N_2O_7S$	510XL-00
NHS-ester	651.74	$C_{33}H_{37}N_3O_9S$	510XL-01
Amino-derivative	633.21	$C_{31}H_{41}N_4O_6S * Cl$	510XL-02
Maleimide	676.80	$C_{35}H_{40}N_4O_8S$	510XL-03





DY-520XL

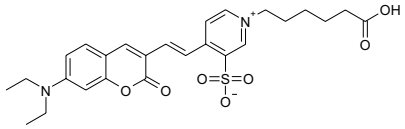


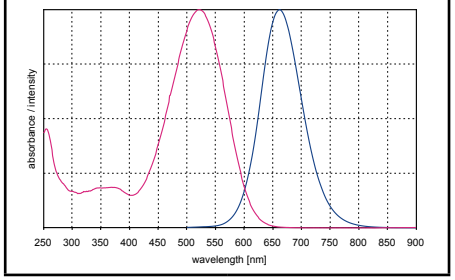
Absorption/emission max.:
522 nm / 662 nm (in Ethanol)

Molar absorbance:
50,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	514.60	$C_{26}H_{30}N_2O_7S$	520XL-00
NHS-ester	611.68	$C_{30}H_{33}N_3O_9S$	520XL-01
Amino-derivative	593.14	$C_{28}H_{37}N_4O_6S * Cl$	520XL-02
Maleimide	636.73	$C_{32}H_{36}N_4O_8S$	520XL-03





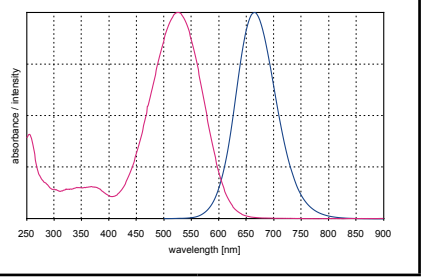
DY-521XL

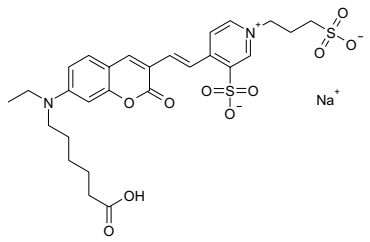
Absorption/emission max.:
526 nm / 666 nm (in Ethanol)

Molar absorbance:
50,000 $M^{-1}cm^{-1}$

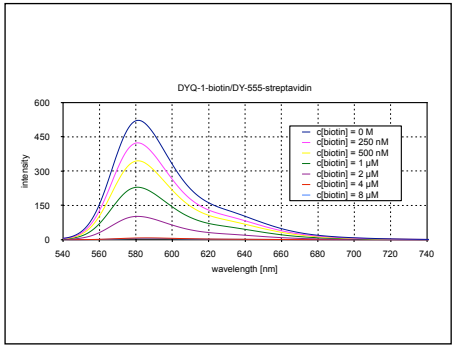
Comments:
- soluble in water, methanol, DMF, DMSO

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	630.67	$C_{27}H_{31}N_2O_{10}S_2 * Na$	521XL-00
NHS-ester	727.75	$C_{31}H_{34}N_3O_{12}S_2 * Na$	521XL-01
Amino-derivative	650.78	$C_{29}H_{38}N_4O_9S_2$	521XL-02
Maleimide	752.80	$C_{33}H_{37}N_4O_{11}S_2 * Na$	521XL-03





DYQ-1



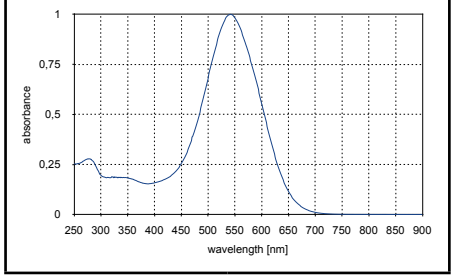
Absorption max.:
543 nm (in PBS)

Molar absorbance:
48,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, DMF

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	788.77	$C_{32}H_{34}N_6O_{11}S_2$ * 2 Na	DYQ1-00
NHS-ester	885.84	$C_{36}H_{37}N_7O_{13}S_2$ * 2 Na	DYQ1-01
Amino-derivative	808.87	$C_{34}H_{41}N_8O_{10}S_2$ * Na	DYQ1-02
Maleimide	910.90	$C_{38}H_{40}N_8O_{12}S_2$ * 2 Na	DYQ1-03

Structure on request

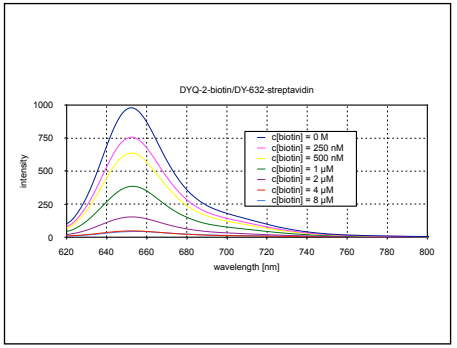


DYQ-2

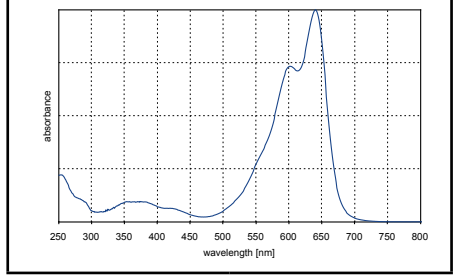
Absorption max.:
641 nm (in Ethanol)

Molar absorbance:
90,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol, ethanol, DMF, DMSO

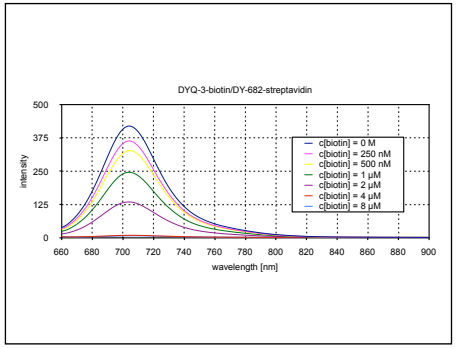


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	745.81	$C_{36}H_{36}NO_{11}S_2$ * Na	DYQ2-00
NHS-ester	842.88	$C_{40}H_{39}N_2O_{13}S_2$ * Na	DYQ2-01
Amino-derivative	765.91	$C_{38}H_{43}N_3O_{10}S_2$	DYQ2-02
Maleimide	867.93	$C_{42}H_{42}N_3O_{12}S_2$ * Na	DYQ2-03



Structure on request

DYQ-3



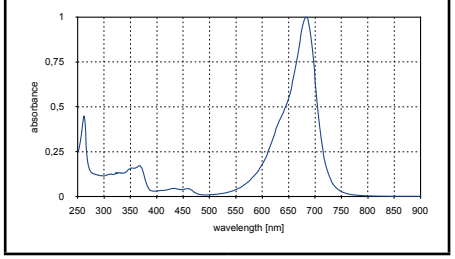
Absorption max.:
683 nm (in Ethanol)

Molar absorbance:
80,000 $M^{-1}cm^{-1}$

Comments:
– soluble in water, methanol

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	802.86	$C_{35}H_{36}N_2O_{11}S_3 * 2\ Na$	DYQ3-00
NHS-ester	899.93	$C_{39}H_{39}N_3O_{13}S_3 * 2\ Na$	DYQ3-01
Amino-derivative	822.96	$C_{37}H_{43}N_4O_{10}S_3 * Na$	DYQ3-02
Maleimide	924.98	$C_{41}H_{42}N_4O_{12}S_3 * 2\ Na$	DYQ3-03

Structure on request



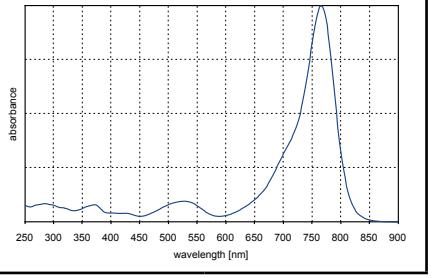
DYQ-4

Absorption max.:
766 nm (in Ethanol)

Molar absorbance:
180,000 $M^{-1}cm^{-1}$

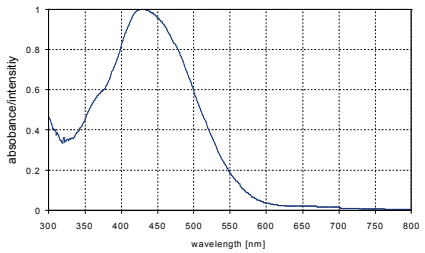
Comments:
– soluble in water, methanol

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	796.94	$C_{41}H_{45}N_2O_9S_2 * Na$	DYQ4-00
NHS-ester	894.02	$C_{45}H_{48}N_3O_{11}S_2 * Na$	DYQ4-01
Amino-derivative	817.04	$C_{43}H_{52}N_4O_8S_2$	DYQ4-02
Maleimide	919.15	$C_{47}H_{51}N_4O_{10}S_2 * Na$	DYQ4-03

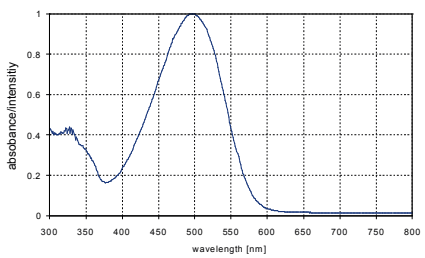


Structure on request

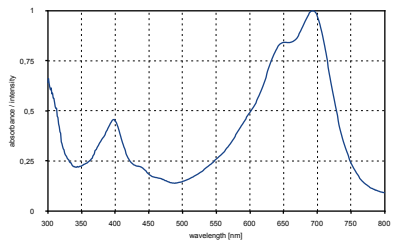
DYQ-425

Absorption spectrum (in PBS buffer pH 7.2)	Description	
	Absorption max.	425 nm (PBS)
	Molar absorbance	24,500 $M^{-1}cm^{-1}$ (PBS)
	Comments	polar water soluble quencher
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	784.37 g/mol	$C_{23}H_{22}Br_2N_4O_{10}S_2$ * 2 Na
NHS-ester	881.44 g/mol	$C_{27}H_{25}Br_2N_5O_{12}S_2$ * 2 Na
Biotin-derivative	1140.86 g/mol	$C_{39}H_{50}Br_2N_8O_{13}S_3$ * 2 Na

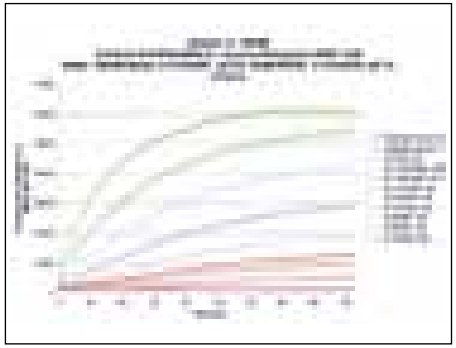
DYQ-505

Absorption spectrum (in PBS buffer pH 7.2)	Description	
	Absorption max.	504 nm (PBS)
	Molar absorbance	39,000 $M^{-1}cm^{-1}$ (PBS)
	Comments	polar water soluble dark quencher
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	713.75 g/mol	$C_{31}H_{33}N_5O_8S_2$ * 2 Na
NHS-ester	810.82 g/mol	$C_{35}H_{36}N_6O_{10}S_2$ * 2 Na
Biotin-derivative	1070.24 g/mol	$C_{47}H_{61}N_9O_{11}S_3$ * 2 Na

DYQ-700

Absorption spectrum (in PBS buffer pH 7.2)	Description	
	Absorption max.	696 nm (PBS)
	Molar absorbance	48,500 $M^{-1}cm^{-1}$ (PBS)
	Comments	polar water soluble quencher
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	808.92 g/mol	$C_{39}H_{41}N_6O_8S_2$ * Na
NHS-ester	905.99 g/mol	$C_{43}H_{44}N_7O_{10}S_2$ * Na
Biotin-derivative	1165.41 g/mol	$C_{55}H_{69}N_{10}O_{11}S_3$ * Na

DYQ-660

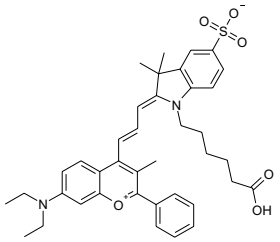


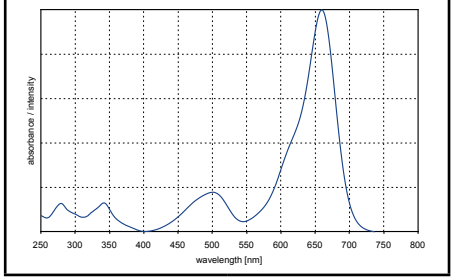
Absorption max.:
660 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
- soluble in methanol, ethanol, DMF, DMSO
- bright solid state emission
- suitable for microarray experiments, FisH microscopy, gel electrophoresis

Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	668.86	$C_{39}H_{44}N_2O_6S$	660Q-00
NHS-ester	765.93	$C_{43}H_{47}N_3O_8S$	660Q-01
Amino-derivative	747.40	$C_{41}H_{51}N_4O_5S * Cl$	660Q-02
Maleimide	790.99	$C_{45}H_{50}N_4O_7S$	660Q-03



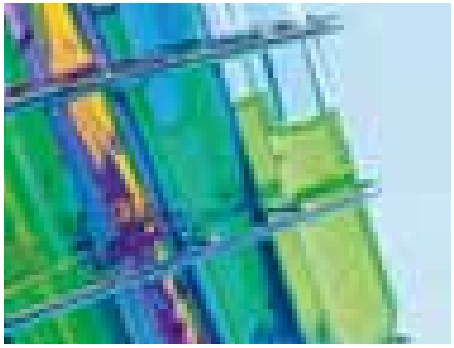


DYQ-661

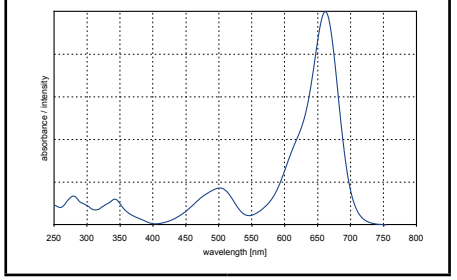
Absorption max.:
662 nm (in Ethanol)

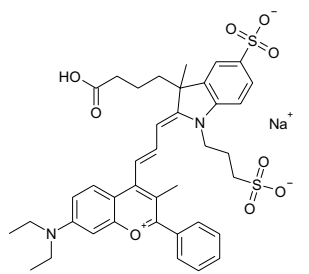
Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
- soluble in water, methanol, DMF, DMSO
- bright solid state emission
- suitable for protein labeling, microarray experiments, FisH microscopy, gel electrophoresis
- improved water solubility

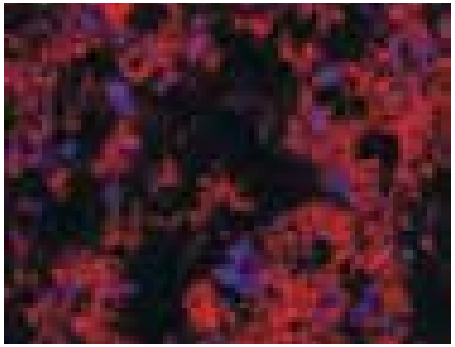


Available Modification	Molecular weight (g · mol^{-1})	Molecular formula	Product-number
Carboxylic acid	770.90	$C_{39}H_{43}N_2O_9S_2 * Na$	661Q-00
NHS-ester	867.97	$C_{43}H_{46}N_3O_{11}S_2 * Na$	661Q-01
Amino-derivative	791.01	$C_{41}H_{50}N_4O_8S_2$	661Q-02
Maleimide	893.03	$C_{45}H_{49}N_4O_{10}S_2 * Na$	661Q-03





FatRed

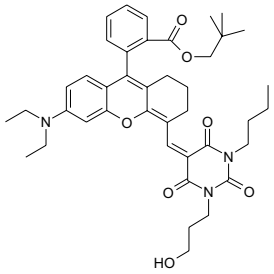


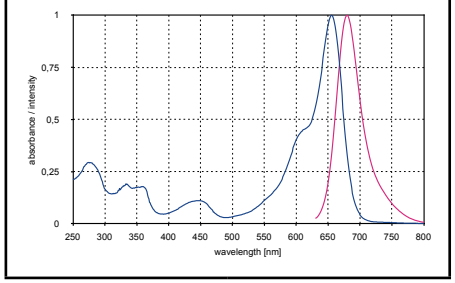
Absorption/emission max.:
656 nm / 680 nm (in Ethanol)

Molar absorbance:
95,000 $M^{-1}cm^{-1}$

Comments:
– soluble in methanol, ethanol, DMF, DMSO

Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
697.88	$C_{41}H_{51}N_3O_7$	FatRed-00





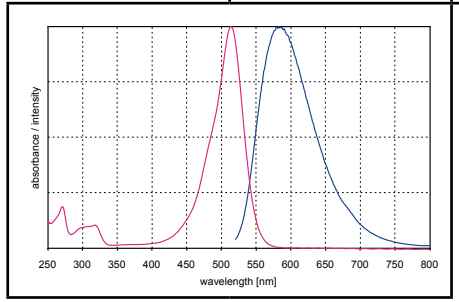
Stain01

Absorption/emission max.:
513 nm / 580 nm (in Ethanol)

Molar absorbance:
120,000 $M^{-1}cm^{-1}$

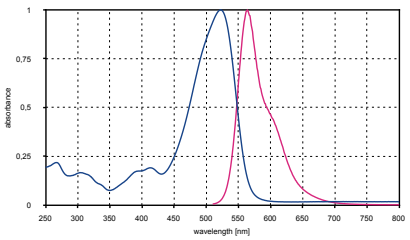
Comments:
– soluble in water, methanol, ethanol, DMF, DMSO

Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
751.94	$C_{37}H_{50}N_3O_8S_2 * Na$	Stain01-00

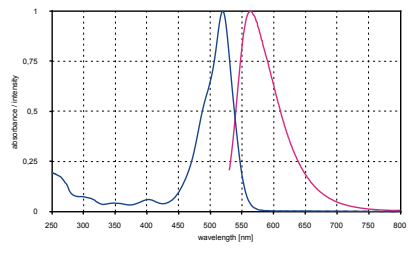


Structure on request

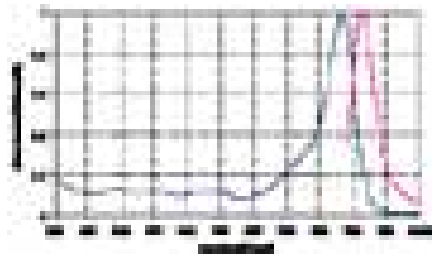
V07-05125

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	520 nm (PBS)
	Emission max.	565 nm (PBS)
	Molar absorbance	45,000 $M^{-1}cm^{-1}$ (in methanol)
	Comments	polar water soluble stain, bright fluorescence in presence of proteins (weak fluorescence in water/buffer without protein)
	Molecular weight	Molecular formula
	701.77 g/mol	$C_{33}H_{37}NO_9S_2$ * 2 Na

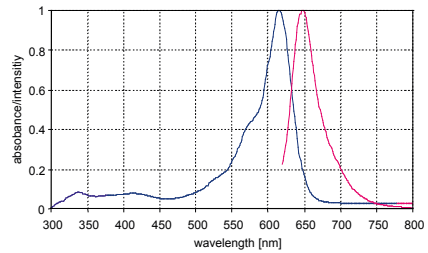
V07-05167

Absorption and emission spectra (in methanol)	Description	
	Absorption max.:	520 nm (methanol)
	Emission max.:	563 nm (methanol)
	Molar absorbance:	125,000 $M^{-1}cm^{-1}$ (methanol)
	Comments:	polar water soluble stain, bright fluorescence in presence of proteins (weak fluorescence in water/buffer without protein)
	Molecular weight	Molecular formula
	806.93 g/mol	$C_{39}H_{47}N_2O_{11}S_2$ * Na

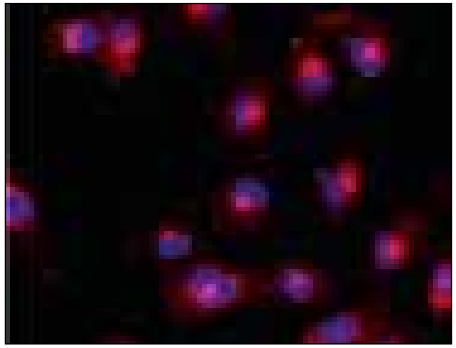
V07-06050

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	684 nm (methanol)
	Emission max.	717 nm (methanol)
	Molar absorbance	81,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	polar water soluble stain, bright fluorescence in presence of proteins (weak fluorescence in water/buffer without protein)
	Molecular weight	Molecular formula
	931.12 g/mol	$C_{47}H_{59}N_2O_{12}S_2$ * Na

V07-07150

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	615 nm (methanol)
	Emission max.	648 nm (methanol)
	Molar absorbance	80,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	polar water soluble stain, bright fluorescence in presence of proteins (weak fluorescence in water/buffer without protein)
	Molecular weight	Molecular formula
	802.99 g/mol	$C_{44}H_{54}N_2O_{10}S$

V02-07027

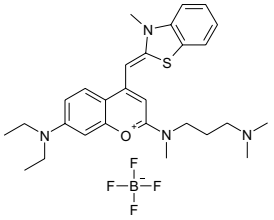


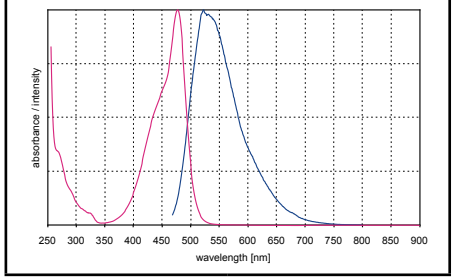
Absorption/emission max.:
477 nm / 522 nm (in Ethanol)

Molar absorbance:
60,000 $M^{-1}cm^{-1}$

Comments:
– soluble in acetone, ethanol, DMF, DMSO
– suitable as DNA-stain

Molecular weight (g · mol^{-1})	Molecular formula	Product-number
564.50	$C_{28}H_{37}N_4OS * BF_4$	V02-07027



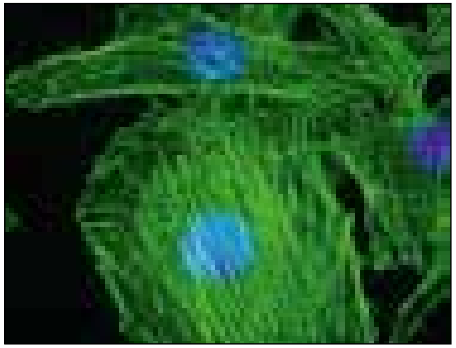


V02-08078

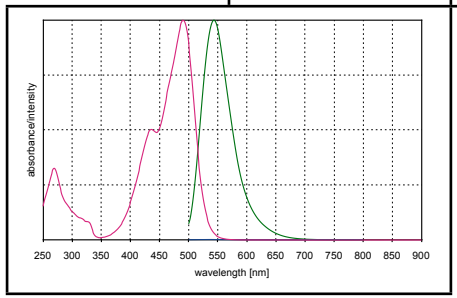
Absorption/emission max.:
490 nm / 537 nm (in Ethanol)

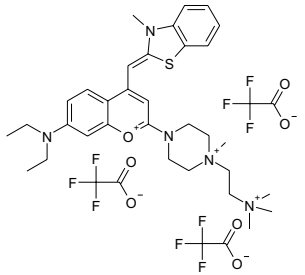
Molar absorbance:
60,000 $M^{-1}cm^{-1}$

Comments:
– soluble in acetone, ethanol, DMF, DMSO
– suitable as DNA-stain

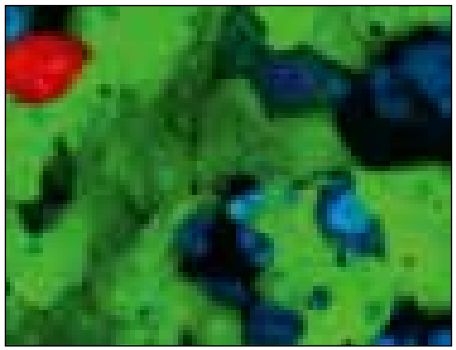


Molecular weight (g · mol^{-1})	Molecular formula	Product-number
887.88	$C_{32}H_{46}N_5OS * 3\ C_2F_3O_2$	V02-08078





V13-01184

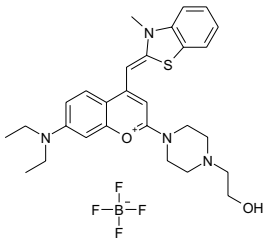


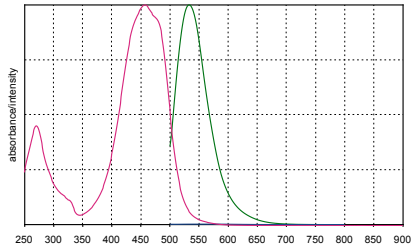
Absorption/emission max.:
481 nm / 526 nm (in Ethanol)

Molar absorbance:
80,000 $M^{-1}cm^{-1}$

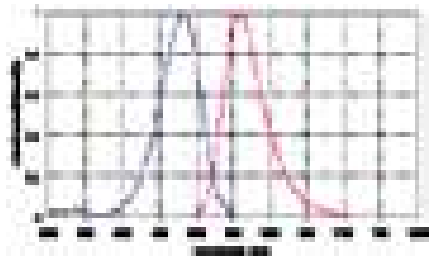
Comments:
– soluble in acetone, ethanol, DMF, DMSO
– suitable as DNA-stain

Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
578.48	$C_{28}H_{35}N_4O_2S * BF_4$	V13-01184

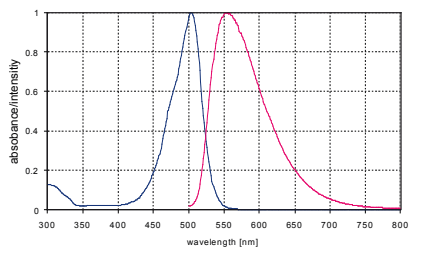




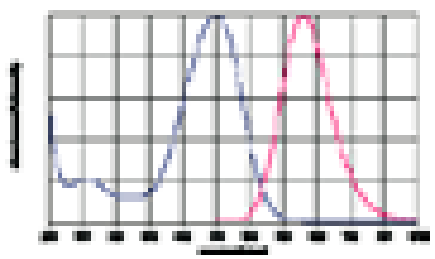
V07-07059

Absorption and emission spectra (in ethanol)	Description	
	Absorption max.	485 nm (ethanol)
	Emission max.	558 nm (ethanol)
	Molar absorbance	62,000 $M^{-1}cm^{-1}$ (ethanol)
	Comments	Nonpolar MegaStokes Dye for multi-colour-detection. Hydroxy-substituted as precursor for phosphoramidite
	Molecular weight	Molecular formula
	440.24 g/mol	$C_{21}H_{25}N_2O_3 * BF_4$

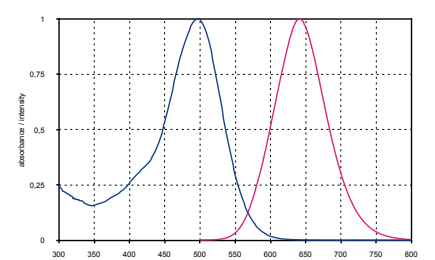
V10-02026

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	502 nm (methanol)
	Emission max.	556 nm (methanol)
	Molar absorbance	120,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	Nonpolar MegaStokes Dye for multi-colour-detection. Hydroxy-substituted as precursor for phosphoramidite
	Molecular weight	Molecular formula
	460.58 g/mol	$C_{28}H_{32}N_2O_4$

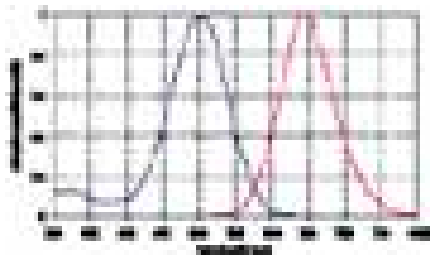
V07-08145

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	503 nm (methanol)
	Emission max.	637 nm (methanol)
	Molar absorbance	53,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	lipophilic MegaStokes Dye soluble in nonpolar solvents like acetone, acetonitrile, DMF, dichloromethane, THF or DMSO
	Molecular weight	Molecular formula
	624.89 g/mol	$C_{36}H_{52}N_2O_5S$

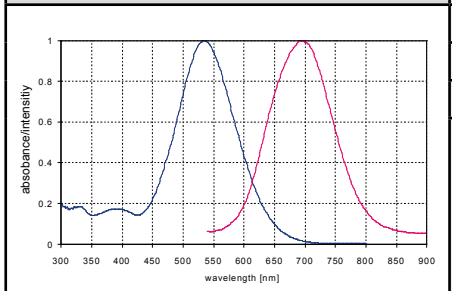
V19-02035

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	497 nm (methanol)
	Emission max.	641 nm (methanol)
	Molar absorbance	36,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	lipophilic MegaStokes Dye soluble in nonpolar solvents like acetone, acetonitrile, DMF, dichloromethane, THF or DMSO
	Molecular weight	Molecular formula
	520.66 g/mol	$C_{29}H_{32}N_2O_5S$

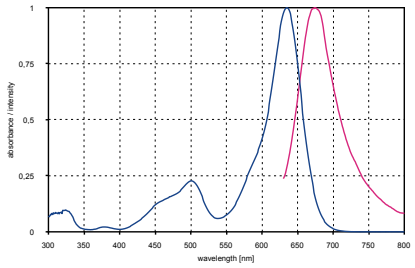
V07-10147

Absorption and emission spectra (in PBS)	Description	
	Absorption max.	501 nm (PBS)
	Emission max.	645 nm (PBS)
	Molar absorbance	39,000 $M^{-1}cm^{-1}$ (PBS)
	Comments	Cationic MegaStokes Dye with intercalating properties
	Molecular weight	Molecular formula
	442.00 g/mol	$C_{25}H_{32}N_3O_2 * Cl$

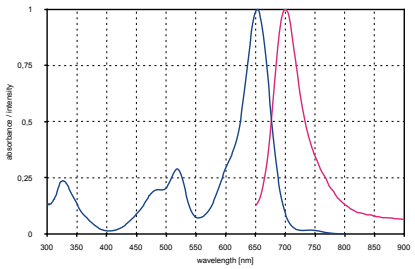
V07-10159

Absorption and emission spectra (in PBS)	Description	
	Absorption max.	534 nm (PBS)
	Emission max.	697 nm (PBS)
	Molar absorbance	31,000 $M^{-1}cm^{-1}$ (PBS)
	Comments	Cationic MegaStokes Dye with intercalating properties
	Molecular weight	Molecular formula
	492.06 g/mol	$C_{29}H_{34}N_3O_2 * Cl$

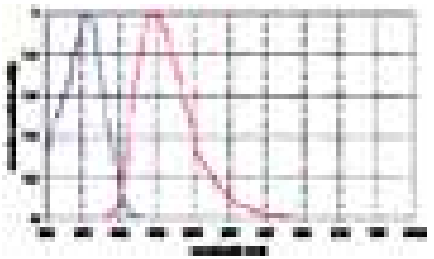
V11-04139

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	635 nm (methanol)
	Emission max.	674 nm (methanol)
	Molar absorbance	113,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	Cationic MegaStokes Dye with intercalating properties. Excitation also at 530nm possible.
	Molecular weight	Molecular formula
	634.57 g/mol	$C_{37}H_{43}N_2O_2 * BF_4$

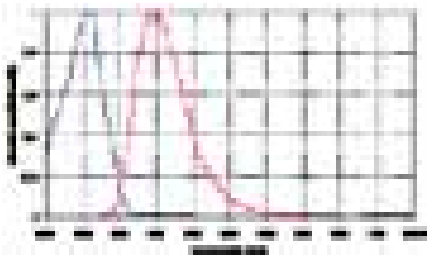
V11-04141

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	653 nm (methanol)
	Emission max.	701 nm (methanol)
	Molar absorbance	113,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	Cationic MegaStokes Dye with intercalating properties. Excitation also at 530nm possible.
	Molecular weight	Molecular formula
	654.56 g/mol	$C_{39}H_{39}N_2O_2 * BF_4$

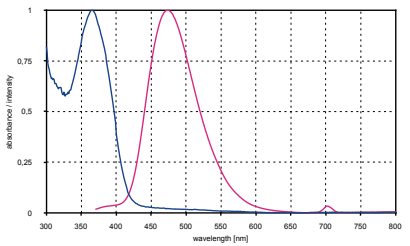
V07-08026

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	356 nm (PBS)
	Emission max.	455 nm (PBS)
	Molar absorbance	18,000 $M^{-1}cm^{-1}$ (methanol)
	Quantum yield	0.55 (PBS)
	Comments	polar water soluble dye, very bright blue fluorescence, hydrophilic alternative to coumarine dyes e.g. (7-Amino-4-methyl-3-coumarinyl)-acetic acid, (7-Hydroxy-4-methyl-3-coumarinyl)-acetic acid, Marina Blue™ or (7-Dimethyl-amino-4-coumarinyl)-acetic acid
Available Modifications	Molecular weight	Molecular formula
Carboxylic acid	632.62 g/mol	$C_{27}H_{26}N_2O_9S_2$ * 2 Na
NHS-ester	729.70 g/mol	$C_{31}H_{29}N_3O_{11}S_2$ * 2 Na

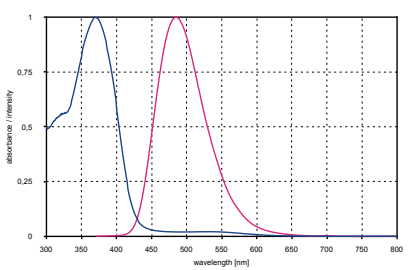
V10-02153

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	362 nm (PBS)
	Emission max.	459 nm (PBS)
	Molar absorbance	25,000 $M^{-1}cm^{-1}$ (methanol)
	Quantum yield	0.52 (PBS)
	Comments	polar water soluble dye, very bright blue fluorescence, hydrophilic alternative to coumarine dyes e.g. (7-Amino-4-methyl-3-coumarinyl)-acetic acid, (7-Hydroxy-4-methyl-3-coumarinyl)-acetic acid, Marina Blue™ or (7-Dimethyl-amino-4-coumarinyl)-acetic acid
Available Modifications	Molecular weight	Molecular formula
Carboxylic acid	632.62 g/mol	$C_{27}H_{26}N_2O_9S_2$ * 2 Na
NHS-ester	729.70 g/mol	$C_{31}H_{29}N_3O_{11}S_2$ * 2 Na

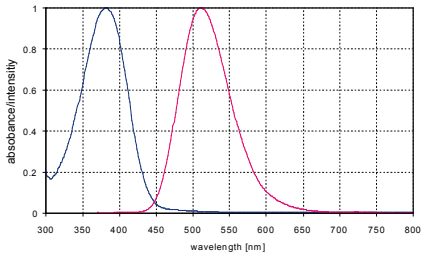
V07-10170

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	368 nm (PBS)
	Emission max.	474 nm (PBS)
	Molar absorbance	13,200 $M^{-1}cm^{-1}$ (PBS)
	Quantum yield	0.85 (PBS)
	Comments	polar water soluble dye, very bright blue fluorescence, hydrophilic alternative to coumarine dyes e.g. Marina Blue™ or (7-Dimethyl-amino-4-coumarinyl)-acetic acid
Available Modifications	Molecular weight	Molecular formula
Carboxylic acid	542.52 g/mol	$C_{22}H_{19}N_2O_9S_2$ * Na
NHS-ester	639.60 g/mol	$C_{26}H_{22}N_3O_{11}S_2$ * Na

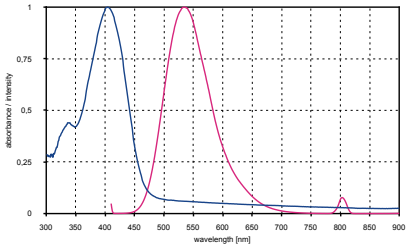
V07-11049

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	380 nm (PBS)
	Emission max.	484 nm (PBS)
	Molar absorbance	13,000 $M^{-1}cm^{-1}$ (PBS)
	Quantum yield	0.85 (PBS)
	Comments	polar water soluble dye, very bright blue fluorescence, hydrophilic alternative to coumarine dyes e.g. Marina Blue™ or (7-Dimethyl-amino-4-coumarinyl)-acetic acid
Available Modifications	Molecular weight	Molecular formula
Carboxylic acid	542.52 g/mol	$C_{22}H_{19}N_2O_9S_2$ * Na
NHS-ester	639.60 g/mol	$C_{26}H_{22}N_3O_{11}S_2$ * Na

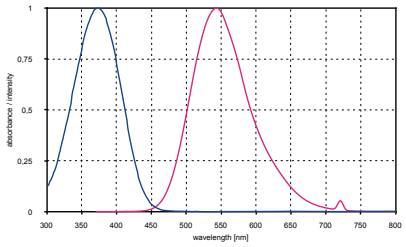
V10-04059

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	383 nm (PBS)
	Emission max.	516 nm (PBS)
	Molar absorbance	19,000 $M^{-1}cm^{-1}$ (PBS)
	Quantum yield	0.70 (PBS)
	Comments	polar water soluble dye, very bright green fluorescence, large Stokes shift, suitable also for multi-colour-detection, alternative to Pacific Orange™
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	448.50 g/mol	$C_{21}H_{24}N_2O_7S$
NHS-ester	545.57 g/mol	$C_{25}H_{27}N_3O_9S$

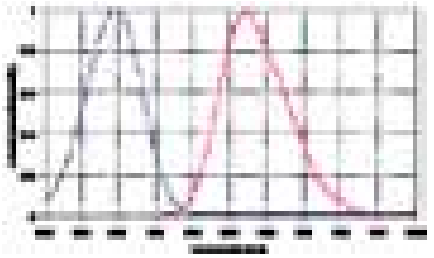
V07-11176

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	404 nm (PBS)
	Emission max.	535 nm (PBS)
	Molar absorbance	18,000 $M^{-1}cm^{-1}$ (PBS)
	Quantum yield	0.73 (PBS)
	Comments	polar water soluble dye, very bright green fluorescence, large Stokes shift, suitable also for multi-colour-detection, alternative to Pacific Orange™
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	592.58 g/mol	$C_{26}H_{21}N_2O_9S_2 * Na$
NHS-ester	689.66 g/mol	$C_{30}H_{24}N_3O_{11}S_2 * Na$

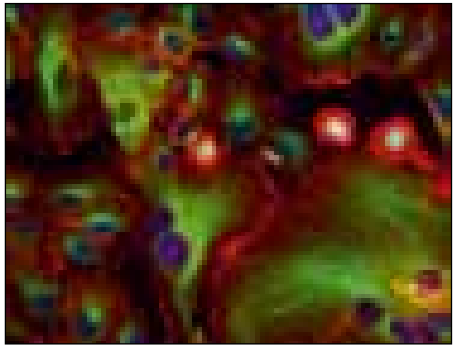
V07-11082

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	375 nm (PBS)
	Emission max.	543 nm (PBS)
	Molar absorbance	16,000 $M^{-1}cm^{-1}$ (PBS)
	Quantum yield	0.62 (PBS)
	Comments	polar water soluble dye, very bright green fluorescence, large Stokes shift, suitable also for multi-colour-detection, alternative to Pacific Orange™
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	447.47 g/mol	$C_{20}H_{21}N_3O_7S$
NHS-ester	544.54 g/mol	$C_{24}H_{24}N_4O_9S$

V19-01139

Absorption and emission spectra (in PBS buffer pH 7.2)	Description	
	Absorption max.	397 nm (PBS)
	Emission max.	572 nm (PBS)
	Molar absorbance	18,000 $M^{-1}cm^{-1}$ (PBS)
	Quantum yield	0.28 (PBS)
	Comments	polar water soluble dye, bright orange fluorescence, large Stokes shift, suitable also for multi-colour-detection, alternative to Cascade Yellow™ or Pacific Orange™
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	490.54 g/mol	$C_{22}H_{26}N_4O_7S$
NHS-ester	587.61 g/mol	$C_{26}H_{29}N_5O_9S$

V08-13007

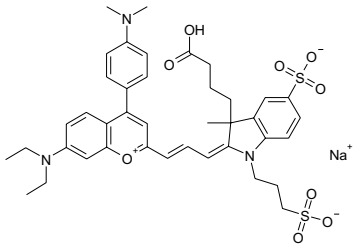


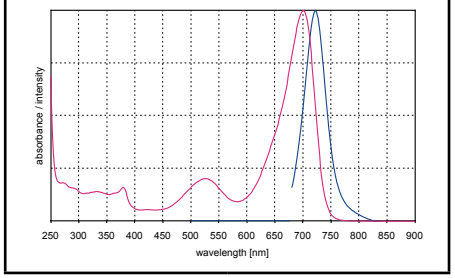
Absorption/emission max.:
699 nm / 723 nm (in Ethanol)

Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
– useful for multicolour detection

Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	799.95	$C_{40}H_{46}N_3O_9S_2 * Na$	V08-13007-00
NHS-ester	897.02	$C_{44}H_{49}N_4O_{11}S_2 * Na$	V08-13007-01
Amino-derivative	820.05	$C_{42}H_{53}N_5O_8S_2$	V08-13007-02
Maleimide	922.06	$C_{46}H_{52}N_5O_{10}S_2 * Na$	V08-13007-03



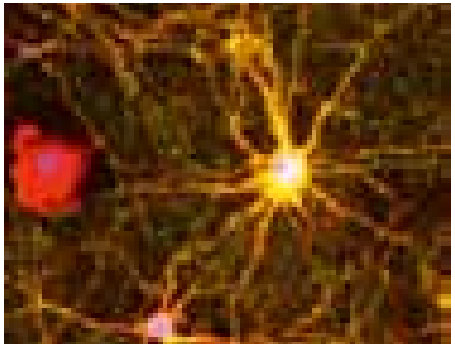


V13-04159

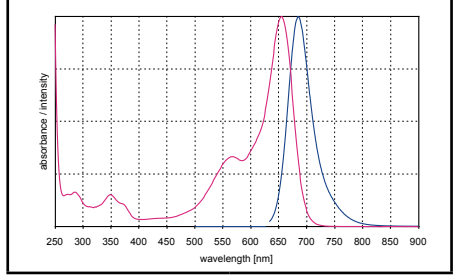
Absorption/emission max.:
656 nm / 684 nm (in Ethanol)

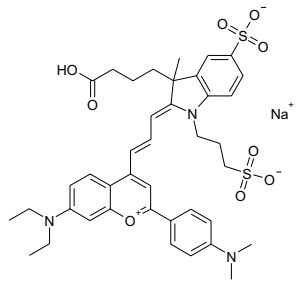
Molar absorbance:
140,000 $M^{-1}cm^{-1}$

Comments:
– useful for multicolour detection

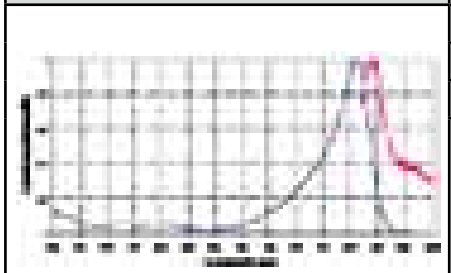


Available Modification	Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
Carboxylic acid	799.95	$C_{40}H_{46}N_3O_9S_2 * Na$	V13-04159-00
NHS-ester	897.02	$C_{44}H_{49}N_4O_{11}S_2 * Na$	V13-04159-01
Amino-derivative	820.05	$C_{42}H_{53}N_5O_8S_2$	V13-04159-02
Maleimide	922.06	$C_{46}H_{52}N_5O_{10}S_2 * Na$	V13-04159-03

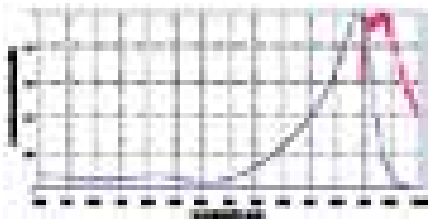




V07-07103

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	863 nm (methanol)
	Emission max.	890 nm (methanol)
	Molar absorbance	178,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	IR-dye
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	907.10 g/mol	$C_{48}H_{55}N_2O_{10}S_2$ * Na
NHS-ester	1004.17 g/mol	$C_{52}H_{58}N_3O_{12}S_2$ * Na

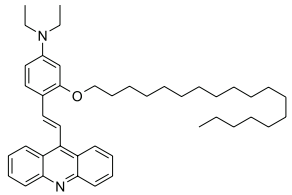
V07-07113

Absorption and emission spectra (in methanol)	Description	
	Absorption max.	888 nm (methanol)
	Emission max.	935 nm (methanol)
	Molar absorbance	151,000 $M^{-1}cm^{-1}$ (methanol)
	Comments	IR-dye
Available Modifications	**Molecular weight**	**Molecular formula**
Carboxylic acid	923.16 g/mol	$C_{48}H_{55}N_2O_9S_3$ * Na
NHS-ester	1020.24 g/mol	$C_{52}H_{58}N_3O_{11}S_3$ * Na

DY-660-S

Molecular weight (g · mol^{-1})	Molecular formula	Product-number
620.96	$C_{43}H_{60}N_2O$	660-S

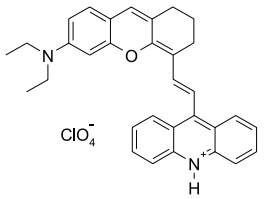
Absorption max.: 665 nm (in Ethanol)
Molar absorbance: 20,000 $M^{-1}cm^{-1}$
Comments: soluble in ethanol, acetonitril, DMF, DMSO



DY-840-S

Molecular weight (g · mol^{-1})	Molecular formula	Product-number
559.01	$C_{32}H_{31}N_2O \cdot ClO_4$	840-S

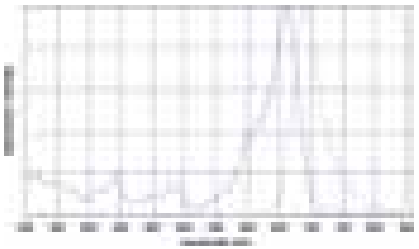
Absorption max.: 840 nm (in Ethanol)
Molar absorbance: 65,000 $M^{-1}cm^{-1}$
Comments: soluble in ethanol, acetonitril, DMF, DMSO



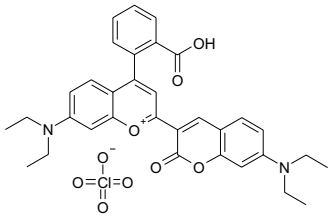
Laser dyes

DY-660-X

Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
637.09	$C_{33}H_{33}N_2O_5 \cdot ClO_4$	660-X

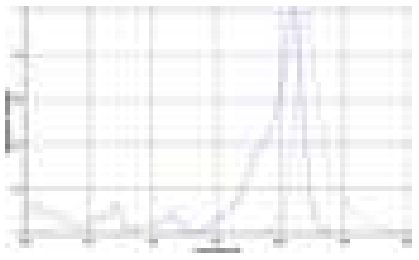


Absorption/ emission max.: 662 nm / 695 nm (in Ethanol)
Molar absorbance: 80,000 $M^{-1}cm^{-1}$
Comments: soluble in dichloro-methane, acetonitril, DMF, DMSO

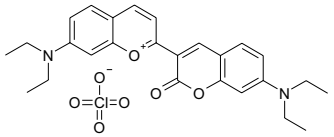


DY-665-X

Molecular weight ($g \cdot mol^{-1}$)	Molecular formula	Product-number
516.98	$C_{26}H_{29}N_2O_3 \cdot ClO_4$	665-X



Absorption/ emission max.: 670 nm / 692 nm (in dichloromethane)
Molar absorbance: 80,000 $M^{-1}cm^{-1}$
Comments: soluble in dichloro-methane, acetonitril, DMF, DMSO

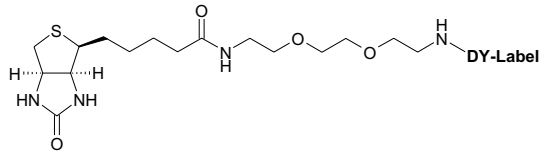


Dyomics offers a wide range of labeled haptens like biotin, phalloidin, mycotoxins, amino acids or nucleotides. These haptens can easily be coupled to all of our fluorescent labels.
If you have need for a special hapten please ask us. We will do the coupling with our superior dyes.

Fluorescently labeled biotins

The binding pairs streptavidin – avidin / biotin or antibody / antigen are very common in cellbiology and molecular biology in applications like in situ hybridisation, histochemistry or flow cytometry. With such systems it is possible to probe poor detectable molecules.

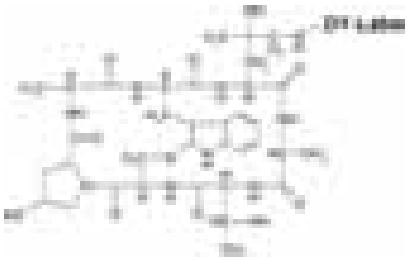
The building block for preparing biotin – DY-dye – conjugates is the biotin-PEO3-amine. PEO3 is a spacer consisting of ethyleneglycol units. This spacer between the biotin and the dye separates the biotin moiety from its point of attachment, enhances the ability to bind to the binding sites of avidin or streptavidin and improves the hydrophilic character of the biotin conjugate.



Unit size
500 µg (higher amounts on request)

Fluorescently labeled phalloidins

Phalloidin binds very selectively to actin and allows the generation of impressive images in combination with a fluorophor. 300 units (the standard sales unit) are sufficient for staining 300 microscopy slides. Methanol is an appropriate solvent for the labeled phalloidins.
For all our labels phalloidin-conjugates are available. Please add –33 to the order number of the dye of your choice.



Unit size
10 nmol/300 units (higher amounts on request)

Fluorescently labeled streptavidin

We offer streptavidin conjugates of all our DY-labels and MegaStokes-Dyes. Each streptavidin conjugate will be delivered with a batch specific absorption spectrum. The conjugates will be shipped in PBS, pH 7.5, 100 mM at a concentration of 1 mg/ml.

Unit size	1 mg at 1 mg/ml (higher amounts on request)

Fluorescently labeled antibodies for secondary detection

Secondary antibodies are very common in applications like fluorescence microscopy and flow cytometry. Dyomics offers several fluorescently labeled polyclonal antibodies for secondary detection, among them

– goat anti-rabbit IgG
– goat anti-mouse IgG &
– goat anti-human IgG

(all affinity purified, H&L). The IgGs will be delivered dissolved in PBS, pH 7.5, 100 mM at a concentration of 1 mg/ml. A batch specific absorption spectrum will be provided.

Unit size	1 mg at 1 mg/ml (higher amounts on request)

Others

If you need an antibody or another protein not listed in this catalogue feel free to contact Dyomics. We can assist you in finding a supplier and we can arrange the import, too. Thus, Dyomics can act as a one stop source for your secondary detection reagents.

DY-Starter-Kit

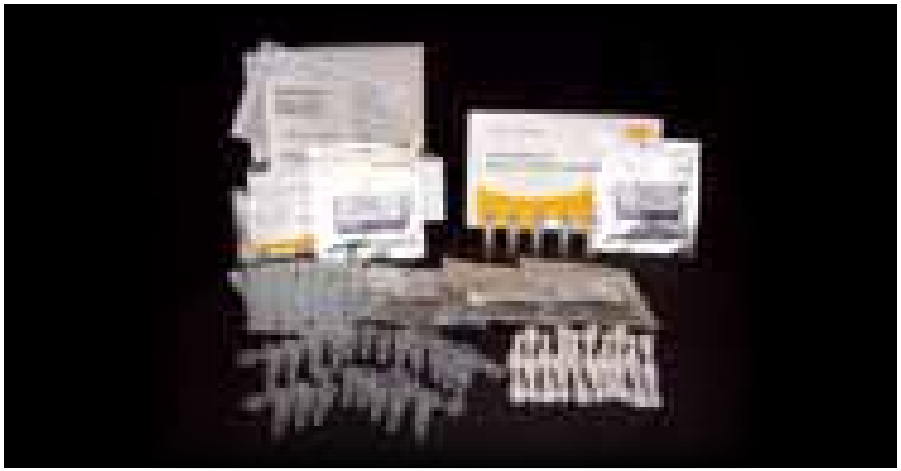
*To allow customers to evaluate a set of DY-labels covering the spectrum from 550 to 800 nm, we offer the **DY-StarterKit**, which contains seven 1 mg portions of DY-NHS-esters of your choice.*

Product-number	SK-1

RedPack

*Dyomics has special expertise in the field of red fluorescent labels. To allow customers to test and select the optimal red fluorescent label for their individual application, we offer the **RedPack**, a collection of seven red fluorescent NHS-esters (1 mg of DY-630, DY-632, DY-633, DY-634, DY-636, DY-649 & DY-652).*

Product-number	RP-1



ChipPack

*The **ChipPack**™ contains 20 µg aliquots of DY-547-NHS/DY-647-NHS-esters. This packing size is convenient for labeling usual amounts of cDNA obtained by reverse transcription with enzymatic incorporation of aminoallyl-dUTP.*

size	# of aliquots	Product-number
S	10 x 2	CP-S
M	25 x 2	CP-M
L	50 x 2	CP-L

Protein Labeling Kits

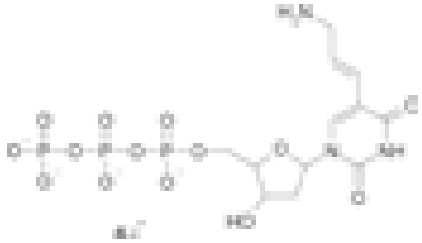
Dyomics offers labeling kits in cooperation with emp Biotech. The core components of these kits are the CentriSep purification columns (Princeton Separation, Inc.) which allow a fast and easy separation of the conjugate from unconjugated dye.

Unit size	Product-number
5 reactions	LK-05
10 reactions	LK-10

For an individual combination of labels for your special need do not hesitate to ask for your personal offer.

Aminoallyl-dUTP for enzymatic incorporation

Molecular formula	$C_{12}H_{16}N_3O_{14}P_3 * 4\ Li$
MW	546.95 $gmol^{-1}$
Concentration	10 mM in water

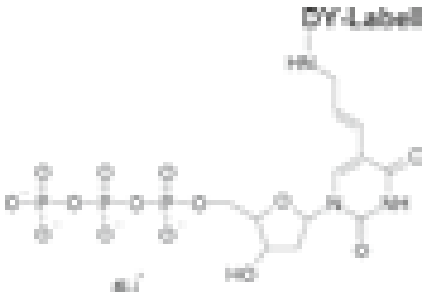


unit size	Product-number
1 mg	010-01
5 mg	010-05
10 mg	010-10

Fluorescently labeled nucleotides

For all our labels aminoallyl-conjugates are available. Please add –34 to the order-number of the dye of your choice.

Unit size	100 µl
Concentration	1 mM aqueous solution
Product-number	XXX-34



Protocols

Protocols

Recommendations / instructions for the labeling of proteins with NHS-esters

Preface:
Fluorescently labelled antibodies are versatile tools in bioanalytics and medical diagnostics. They find their use, among others, in technologies like fluorescence microscopy, flow cytometry, protein microarrays and microtiter plate based detection schemes. There are many suppliers for labelled antibodies, and even more for unconjugated proteins. Kits for the labelling of proteins are also available from various sources. One crucial issue, especially in academic institutions, is the price of the kits or conjugated proteins which is prohibitive for some experiments. The following instructions want to describe an economic method of labelling proteins with simple recipies and instrumentation which allow a full control of all ongoing processes.

The recipes:
Sodium bicarbonate buffer for dialysis and labelling (10x /500 mM)
Dissolve 21 g (250 mmol) of sodium hydrogen carbonate in 400 ml distilled water. Add 1 g of sodium azide (0.2 per cent, works as bacteriozide). Adjust the pH with a concentrated aqueous solution of sodium hydroxide to pH 8.3. Prior to use, dilute the buffer by adding 9 parts water to one part of the concentrated stock solution (v/v).

100 mM PBS-buffer pH 7.4 for elution and storage
Dissolve 2.19 g sodium dihydrogen phosphate ($NaH_2PO_4 \cdot H_2O$, 15.9 mmol), 14.97 g disodium hydrogen phosphate ($Na_2HPO_4 \cdot 2H_2O$, 84.1 mmol), 5.8 g sodium chloride (100 mmol) and 0.32 g sodium azide in 1 l distilled water.

Additional materials and instruments required:
- *Protective gloves*
- *1 pipet 0.5–10 µl and corresponding tips (white)*
- *1 pipet 10–100 µl and corresponding tips (yellow)*
- *Centrifuge for Eppendorf vials*
- *Ultrasonification bath (recommended, but not required)*
- *1 Pasteur pipet*
- *Dry DMF (e.g. Fluka PO-no. 40228)*
- *Sephadex G-25 medium (GE Healthcare)*
- *Column for size exclusion chromatography (e.g. 5 ml or 10 ml graduated pipettes)*
- *Silanized glass fiber wadding (e.g. Macherey & Nagel PO-no. 718 002)*
- *1 glass bar (at least as long as the column)*
- *4 beakers (size can vary)*
- *1 tripod with clamp*
- *Shaker for Eppendorf tubes*
- *2 Eppendorf vials (1.5 ml)*
- *UV-spectrometer*

Only when dialysis is required:
- *QuixSep Micro dialyzer (Orange Scientific n.v./s.a./ Belgium)*
- *Dialyzing membrane (also avaibable from Orange Scientific)*
- *Magnetic stirrer*
- *Stirring bar*

Safety remark:
Always wear protective gloves, lab coat and splash goggles for your personal safety when following the instructions below. In addition, make yourself familiar with the MSDSs which come with the products and chemicals.

Antibody preparation:
Commercially available proteins are usually supplied in aqueous buffer or lyophilised from it. It is essential for a successful labelling reaction that there are no primary or secondary amines present in the reaction solution (otherwise the amine containing buffer components would be labelled instead of the target protein). Thus it is highly recommended to remove buffer components like Tris or ammonia by dialysis against the labelling buffer (50 mM sodium hydrogen carbonate, see recipe above). The QuixSep microdialyzer chamber (see http://www.orangesci.com/dialqs.htm for detailed instructions) offers therefore a convenient procedure which is also suitable for low volumes ranging from 100 µl up to 5 ml. Simply fill your protein solution into the dialysis chamber, place a dialysis membrane which was allowed to equilibrate in the labelling buffer for a few minutes on it and fix it by pushing the collar over it. Dialysis can now be done in a 250 ml beaker against the labelling buffer under constant stirring with a magnetic stirrer. Exchange the labelling buffer twice within three hours. Collect the protein solution from the vial by piercing a pipet through the membrane, aspirating the sample and placing it into an Eppendorf vial. Now you have your protein ready for the labelling reaction.
If you are sure that there are no amines present in your protein solution you can also simply add an appropriate volume of the labelling buffer stock solution to your protein to adjust the pH around 8.3.

To enable a batch-to-batch consistency of the degree of labelling, it is necessary to keep the dye to protein ratio constant for each labelling reaction. The following calculation is an example for the use of DY-647-NHS-ester (MW 761.85 $g \cdot mol^{-1}$, 1 mg) for labelling 1 mg of an IgG (MW 150,000 $g \cdot mol^{-1}$). Notwithstanding the fact that an optimal degree of labelling depends on the individual application for the conjugate and can require optimisation, a sixfold molar excess of dye for the labelling reaction is a good value to start with.
The molar ratio between 1 mg dye and 1 mg antibody is 197 (150,000 / 761.85). In order to work with volumes lower than 100 µl, 98.5 µl DMF (197 / 2) should be given into the plastic vial containing the 1 mg of DY-647-NHS-ester. To assist proper dissolving of the NHS-ester you can vortex the vial. Alternatively, ultrasonification of the solution for a couple of seconds is also a convenient way to dissolve the reactive dye. It can happen that some solvent and dye is contained in the screw cap of the vial. This material can be recovered by shortly centrifuging the vial.
DMF is superior to the more common DMSO as solvent for reactive dyes for several reasons. It is less hygroscopic, has a lower boiling point (which is important if you want to remove the solvent again from unused dye in a speedvac), and often dyes are better soluble in it. These advantages should override fears about the toxicity of this versatile solvent.

To start the labelling reaction, transfer 3 µl of the NHS-ester solution to the IgG in the reaction buffer. If you can control the concentration of the protein, a concentration of 5 mg/ml is recommended. In our case, the 1 mg IgG should have been dissolved in 200 µl of 50 mM bicarbonate buffer. Lower concentrations lead to a reduced labelling efficiency due to the fact that the hydrolysis of the NHS-ester competes the labelling reaction, and the less protein is present the more the hydrolysis dominates.
Allow the labelling to be done in the Eppendorf vial placed in a shaker over the course of two hours. After this time, the NHS-ester should be either bound to the protein or have been hydrolized which makes the use of a stopping reagent obsolete.

The Sephadex G-25 medium is a classic gel filtration material. Upon addition of elution buffer, it swells by a factor of five in volume. Thus, it is recommended to put at least 6 ml of elution buffer onto 1.2 g Sephadex in a beaker for filling a 5 ml-column. Double the amounts for a 10 ml column. A 5 ml-column is recommended for reaction solution volumes up to 250 µl. Please use a 10 ml-column for volumes up to 1 ml.
To prepare the size-exclusion chromatography column, fix the column vertically in the clamp of the tripod. Put a small amount of the silanized glass fiber wadding into the column and push it with the help of the glass bar to the small opening at the ground. The wadding allows the buffer to flow through it while it holds back the gel.
Now pipet once elution buffer into the column, immediately followed by the swollen gel in elution buffer which had been allowed before to equilibrate for at least one hour. Fill the column entirely with the gel and allow thereby the material to settle. If the Sephadex in the beaker runs dry due to the aspiration of the buffer, simply add some more of the elution buffer to liquidize the gel again. Keep a 1 cm region at the top of the column free of the gel.
Now transfer your coloured labelling solution slowly onto the column and allow it to sink into the gel. Wash your pipet carefully (or use a new one) to remove all traces of dye or protein which would contaminate your elution buffer. After the labelling solution has sunk fully into the column, start to elute the conjugate by slowly adding the elution buffer drop by drop onto the column. You can add bigger portions once there is a dye free zone on top of the column. When the reaction solution is eluated, you will see a separation between the labelled protein which runs ahead as a quite sharp band while the free dye is slowly smearing behind.
Once the conjugate arrives at the bottom of the column collect it in an Eppendorf vial. While selecting the size of the vial keep in mind that the volume of the protein conjugate solution increases by a factor of ca. 2.5 on the column. Dispose the used Sephadex gel after collecting the conjugate and wash the column. It would be very time-consuming to wash the free dye from the gel, and traces of it could impurify the next conjugate. It is really not worth the time, and the price for 1 g Sephadex is less than €3.

To characterize your protein conjugate solution it is recommended to record an absorption spectrum of it over the full wavelength range covering both the protein absorption at 280 nm as well as the maximum wavelength of the dye together with the shape of the dye's absorption band. Avoid thereby absorbance values exceeding "2" because such values are hard to interpret. Use cuvettes with smaller pathlengths instead or dilute a small fraction of your conjugate solution appropriately with the elution buffer, e.g. by a factor of 20.

A dye to protein (D/P) ratio can be calculated according to a formula derived from the combination of the Lambert-Beer law for 280 nm and the absorption maximum of the dye. A high uncertainty in this formula is the molar absorbance of the dye at its absorption maximum. Usually, the molar absorbance is determined in organic solvents because this parameter is concentration dependent in aqueous solution.

Thus, one can not be sure if the calculated D/P ratio reflects the experimental truth. The absorption spectrum over the full UV-Vis range is a more reliable analytical information and should be used to compare conjugates among each other.

The 95.5 µl of the DY-647-NHS-ester which remain from the reaction should be stored at -20°C. An exact shelf life of this solution can not be given. The most crucial factor for the stability of the NHS-ester is to protect if from humidity/moisture. Thus, allow the frozen vial to come completely to room temperature prior to opening it again. A simple test for the remaining activity of the dissolved reactive dye could be to couple it to a small amount (0.5 mg) of a cheap protein like bovine serum albumin (or, in times of BSE, streptavidin) according to the instructions given above when using the dye the first time. Later on, the coupling can be repeated, and the absorption spectrum of the conjugate gives an information about how the NHS-ester degraded over the storage time. In correspondence, the amount of NHS-ester can be adjusted for the labelling reaction with the desired protein.

When labelling proteins with colourless haptens like biotin-NHS-ester, a first coupling with a coloured dye and a cheap protein should be performed on the column whereby the volume of the eluent which leaves the column prior to the conjugate should be measured. Assuming that the elution times for proteins are nearly identical (an allowable assumption since it is about size exclusion chromatography), the same dead volume can be disposed prior to collecting the desired colourless conjugate in a second run on the same column with fresh Sephadex gel.

Services

Aside from our standard product portfolio we offer the customizing of fluorescent labels as well as the synthesis of conjugates on demand. Together with reliable partners we can supply fluorescently labeled DNA-oligonucleotides, fluorogenic, peptide-based enzyme substrates and fluorescently labeled small molecules such as ß-estradiole or nucleotides. Feel free to contact Dyomics for a quotation. We are sure that our cost/performance ratio will convince you.

Recommended literature

DY-681 and DY-781 labeled primers
Ritz C.M., Wisseman V., Microsatellite Analyses of Artificial and Spontaneous Dogrose Hybrids Reveal the Hybridogenic Origin of Rosa micrantha by the Contribution of Unreduced Gametes, Journal of Heredity, doi:10.1093/jhered/esq124.

Review
Napp J., Mathejczyk J.E., Alves F., Optical imaging in vivo with a focus on paediatric disease:technical progress, current preclinical and clinical applications and future perspectives, Pediatr Radiol, (2011)DOI 10.1007/s00247-010-1907-0.

DY-682-labeled secondary antibodies
Koplin A., Preissler S., Ilina Y., Koch M., Scior A., Erhardt M., Deuerling E., A dual function for chaperones SSB–RAC and the NAC nascent polypeptide–associated complex on ribosomes, The Journal of Cell Biology, Vol. 189(2010)57–68.

DY-682 and DY-800 labeled secondary antibodies
Ferreira D.N., Katayama I.A., Oliveira I.B, Rosa K.T., Furukawa L.N.S., Coelho M.S., Casarini D.E., Heimann J.C., Salt-Induced Cardiac Hypertrophy and Interstitial Fibrosis Are Due to a Blood Pressure–Independent Mechanism in Wistar Rats, The Journal of Nutrition, 140(2010)1742-51.

DY-601XL, DY-613, V07-04118 and V07-04146 as stains in acid media
Brockmann S., Arnold T., Schweder B., Bernhard G., Visualizing Acidophilic Microorganisms in Biofilm Cummunities Using Acid Stable Fluorescence Dyes, Journal of Fluorescence, 20(2010)943-51.

DY-520XL in TIRF microscopy
Spendier K., Carroll-Portillo A., Lidke K.A., Wilson B.S., Timlin J.A., Thomas J.L., Distribution and Dynamics of Rat Basophilic Leukemia Immunoglobulin E Receptors (Fc3RI) on Planar Ligand-Presenting Surfaces, Biophysical Journal, 99(2010)388–397

DY-549 and DY-649 on protein microarrays
Schröder C., Jacob A., Tonack S., Radon T.P., Sill M., Zucknick M., Rüffer S., Costello E., Neoptolemos J.P., Crnogorac-Jurcevic T., Bauer A., Fellenberg K., Hoheisel J.D., Dual-color Proteomic Profiling of Complex Samples with a Microarray of 810 Cancer-related Antibodies, Mol Cell Proteomics. 9(2010)1271–1280.

Review
Paganin-Gioanni A., Bellard E., Paquereau L., Ecochard V., Golzio M., Teissié J., Fluorescence imaging agents in cancerology, Radiol Oncol 2010; 44(3): 142-148.

DY-520XL in multicolour microscopy
Carroll-Portillo A., Spendier K., Pfeiffer J., Griffiths G., Li H., Lidke K.A., Oliver J.M., Lidke D.S., Thomas J.L., Wilson B.S., Timlin J.A., Formation of a Mast Cell Synapse: FcRI Membrane Dynamics upon Binding Mobile or Immobilized Ligands on Surfaces, The Journal of Immunology, 184(2010)1328-1338.

DY-752 as imaging agent
Pöschinger T., Janunts E., Brünner H., Langenbucher A., CCD-based projectional imaging of fluorescent probes in tissue-like media: experimental setup and characterization, Zeitschrift für Medizinische Physik, 2010, in press.

Recommended literature

DY-481XL and DYQ-661 as FRET-pair
Tan C., Gajovic-Eichelmann N., Stöcklein W.F.M., Polzius R., Bier F.F., Direct detection of Δ9-tetrahydrocannabinol in saliva using a novel homogeneous competitive immunoassay with fluorescence quenching, Analytica Chimica Acta, 658(2010)187-192.

DY-636 on labeled particles
Jiang X., Weise1 S., Hafner M., Röcker C., Zhang F., Parak W.J., Nienhaus G.U., Quantitative analysis of the protein corona on FePt nanoparticles formed by transferrin binding, J. R. Soc. Interface 6 February 2010 vol. 7 no. Suppl 1 S5-S13.

DY-682 in tumor imaging
Gong H., Kovar J., Little G., Chen H., Olive D.M., In Vivo Imaging of Xenograft Tumors Using an Epidermal Growth Factor Receptor-Specific Affibody Molecule Labeled with a Near-infrared Fluorophore, Neoplasia. 2010 February; 12(2): 139–149.

DY-681-labeled primers
Perovic D., Förster J., Devaux P., Hariri D., Guilleroux M., Kanyuka K., Lyons R., Weyen J., Feuerhelm D., Kastirr U., Sourdille P., Röder M., Ordon F., Mapping and diagnostic marker development for Soil-borne cereal mosaic virus resistance in bread wheat, Mol Breeding, 23(2009)641–653.

DY-681-UTP
Owczarek-Lipska M., Dolf G., Guziewicz K.E., Leeb T., Schelling C., Posthaus H. Braunschweig M.H., Bovine cardiac troponin I gene (TNNI3) as a candidate gene for bovine dilated cardiomyopathy, Archiv Tierzucht, 52(2009)113-123.

DY-781-dUTP in PCR application
Braunschweig M.H., Quantification of global DNA methylation with infrared fluorescence in liver and muscle tissues of differentially fed boars, Luminescence, 24(2009)213-216.

DY-633-HaloTag
Kosaka N., Ogawa M., Choyke P.L., Karassina N., Corona C., McDougall M., Lynch D., Hoyt C., Levenson R., Los G.V.,Kobayashi H., In Vivo Stable Tumor-Specific Painting in Various Colors Using Dehalogenase-Based Protein-Tag Fluorescent Ligands, Bioconjug Chem., 20(2009)1367–1374.

DY-681 in PCR application
Vollmer T., Kleesiek K., Dreier J., Lipopolysaccharide-binding protein (LBP) gene polymorphisms: Rapid genotyping by real-time PCR and association with infective endocarditis, Clinical Biochemistry 42 (2009) 1413–1419.

DY-750 and DY-776 in tumor imaging
Makino A., Kizaka-Kondoh S., Yamahara R., Hara I., Kanzaki T., Ozeki E., Hiraoka M., Kimura S., Near-infrared fluorescence tumor imaging using nanocarrier composed of poly(L-lactic acid)-block-poly(sarcosine) amphiphilic polydepsipeptide, Biomaterials, 30(2009)5156-5160.

DY-485XL labeled secondary antibody
Vag T., Schramm T., Kaiser W.A., Hilger I., Proliferating and quiescent human umbilical vein endothelial cells (HUVECs): a potential in vitro model to evaluate contrast agents for molecular imaging of angiogenesis, Contrast Media & Molecular Imaging, 4(2009)192-198.

Recommended literature

DY-615 in labeled peptides
Pola R., Studenovsky M., Pechar M., Ulbrich K., Hovorka O., Vetvicka D., Rihova B., HPMA-copolymer conjugates targeted to tumor endothelium using synthetic oligopeptides, Journal of Drug Targeting, 2009.

MegaStokes dyes in silica particles
Herz E., Burns A., Bonner D., Wiesner U., Large Stokes-Shift Fluorescent Silica Nanoparticles with ENhanced Emission Over Free Dye for Single Excitation Multiplexing, Macromolecular Rapid Communications, 30(2009)1907-10.

DY-635 and DY-647-biotin conjugates
Luschtinetz F., Dosche C., Kumke M.U., Influence of Streptavidin on the Absorption and Fluorescence Properties of Cyanine Dyes, Bioconjugate Chemistry, 20(2009)576-582.

DY-676, DY-681, DY-731, DY-751 and DY-776 for molecular imaging
Pauli J., Vag T., Haag R., Spieles M., Wenzel M., Kaiser W.A., Resch-Genger U., Hilger I., An in vitro characterization study of new near infrared dyes for molecular imaging, European Journal of Medicinal Chemistry, 44(2009)3496-3503.

DY-730, DY-731, DY-732, DY-734 and DY-780 in silica nanoparticles
Herz E., Ow H., Bonner D., Burns A., Wiesner U., Dye structure-optical property correlations in near-infrared fluorescent core-shell silica nanoparticles, Journal of Materials Chemistry, DOI:10/1039/b902286d.

V03-01136 (now FatRed) as fat stain
Heilig A., Göggerle A., Hinrichs J., Multiphase visualisation of fat containing beta-lactoglobulin-k-carrageenan gels by confocal scanning laser microscopy, using a novel dye, V03-01136, for fat staining, LWT - Food Science and Technology, 42(2009)646-53.

DY-547 in antibody labeling
Mindt T.L., Jungi V., Wyss S., Friedli A., Pla G., Novak-Hofer I., Grünberg J., Schibli R., Modification of Different IgG1 Antibodies via Glutamine and Lysine using Bacterial and Human Tissue Transglutaminase, Bioconjugate Chem., 19(2008)271–278.

DY-649 labeled antibodies
Almeida R.S., Brunke S., Albrecht A., Thewes S., Laue M., Edwards J.E.Jr., Filler S.G., Hube B., The Hyphal-Associated Adhesin and Invasin Als3 of Candida albicans Mediates Iron Acquisition from Host Ferritin, PLoS Pathogens, 4(2008)e1000217.

DY-675 for cancer imaging
Tanisaka H., Kizaka-Kondoh S., Makino A., Tanaka S., Hiraoka M., Kimura S., Near-Infrared Fluorescent Labeled Peptosome for Application to Cancer Imaging, Bioconjugate Chemistry, 19(2008)109-117.

DY-485XL in STED-microscopy
Schmidt R., Wurm C.A., Jakobs S., Engelhardt J., Egner A., Hell S.W., Spherical nanosized spot unravels the interior of cells, nature methods, 5(2008)539-544.

DY-548 and DY-648 on cDNA-microarrays
Maier M., Wutzler S., Bauer M., Trendafilov P., Henrich D., Marzi I., ALTERED GENE EXPRESSION PATTERNS IN DENDRITIC CELLS AFTER SEVERE TRAUMA: IMPLICATIONS FOR SYSTEMIC INFLAMMATION AND ORGAN INJURY, SHOCK, 30(2008)344-351.

Recommended literature

DY-676 for in vivo imaging
Deissler V., Rüger R., Frank W., Fahr A., Kaiser W.A., Hilger I., Fluorescent Liposomes as Contrast Agents for In Vivo Optical Imaging of Edemas in Mice, Small, 4(2008)1240-6.

DY-676 for in vivo imaging
Lisy M.R., Goermar A., Thomas C., Pauli J., Resch-Genger U., Kaiser W.A., Hilger I., In Vivo Near-infrared Fluorescence Imaging of Carcinoembryonic Antigen-expressing Tumor Cells in Mice, Radiology, 247(2008)779-787.

DY-505, DY-555 and DY-635 in electrophoresis application
Volke D., Hoffmann R., Quantitative proteomics by fluorescent labeling of cysteine residues using a set of two cyanine-based or three rhodaminebased dyes, ELECTROPHORESIS, 29(2008)4516–4526.

DY-680 and DY-780 in proteomics
Riederer I.M., Herrero R.M., Leuba G., Riederer B.M., Serial protein labeling with infrared maleimide dyes to identify cysteine modifications, Journal of Proteomics, 71(2008)222-230.

DY-680 and DY-780 in proteomics (among others) / Review
Riederer B.M., Non-covalent and covalent protein labeling in two-dimensional gel electrophoresis, Journal of Proteomics, 71(2008)231-244.

DY-547-Streptavidin
Mora J.R., Zielinsky T.L., Nelson B.P., Getts R.C., Protein detection enhanced by 3DNA dendrimer signal amplification, BioTechniques, 44(2008)815-818.

DY-665-X as standard for NIR-quantum yield measurements
Fischer G.M., Ehlers A.P., Zumbusch A., Daltrozzo E., Near-Infrared Dyes and Fluorophores Based on Diketopyrrolopyrroles, Angew. Chem. Intl. Ed., 46(2007)3750-3753.

DY-548 and DY-648 on microarrays:
Auer J., Bläss M., Schulze-Koops H., Russwurm S., Nagel T., Kalden J.R., Röllinghoff M., Beuscher H.U., Expression and regulation of CCL18 in synovial fluid neutrophils of patients with rheumatoid arthritis, Arthritis Research & Therapy, 9(2007)5R94, 12 pages.

DY-547 on microarrays
Kusnezow W., Banzon V., Schröder C., Schaal R., Hoheisel J.D., Rüffer S., Luft P., Duschl A., Syagailo Y.V., Antibody microarray-based profiling of complex specimens: systematic evaluation of labeling strategies, Proteomics, 7(2007)1786-1799.

DY-633-labeled secondary antibody
Derwinska K., Sauer U., Preininger C., Reproducibility of hydrogel slides in on-chip immunoassays with respect to scanning mode, spot circularity, and data filtering, Analytical Biochemistry, 370(2007)38-46.

DY-633-labeled secondary antibody
Derwinska K., Gheber L.A., Preininger C., A comparative analysis of polyurethane hydrogel for immobilization of IgG on chips, Analytica Chimica Acta, 592(2007)132-138.

Recommended literature

DY-485XL in 4Pi microscopy:
Lang M.C., Engelhardt J., Hell S.W., 4Pi microscopy with linear fluorescence excitation, Optics Letters, 32(2007)259-61 .

DY-485XL-labeled antibody in microscopy:
Staudt, T., Lang M., Medda R., Engelhardt J., Hell S. W., 2,2'-Thiodiethanol: a new water soluble mounting medium for high resolution optical microscopy, Microsc. Res. Tech., 70(2007) 1-9.

DY-633-biotin in microscopy:
Rinne J., Albarran B., Jylhävä J., Ihalainen T.O., Kankaanpää P., Hytönen V.P., Stayton P.S., Kulomaa M.S., Vihinen-Ranta M., Internalization of novel non-viral vector TAT-streptavidin into human cells, BMC Biotechnology, 7(2007)1-14.

DY-676 as contrast agent:
Lisy M.-R., Hartung A., Lang C., Schüler D., Richter W., Reichenbach J.R., Kaiser W.A., Hilger I., Fluorescent Bacterial Magnetic Nanoparticles as Bimodal Contrast Agents, Investigative Radiology, 42(2007)235-41.

DY-547-labeled cGMP:
Biskup C., Kusch J., Schulz E., Nache V., Schwede F., Lehmann F., Hagen V., Benndorf K., Relating lingand binding to activation gating in CNGA2 channels, nature, 446(2007)440-3.

DY-415, DY-550 and DY-631 for biochips:
Glasenapp C., Mönch W., Krause H., Zappe H., Biochip reader with dynamic holographic excitation and hyperspectral fluorescence detection, Journal of Biomedical Optics, 12(2007)014038, 8 pages.

Volkmer T., Becker C., Prodöhl A., Finger C., Schneider D., Assembly of a transmembrane b-Type cytochrome is mainly driven by transmembrane helix interactions, Biochimica et Biophysica Acta (BBA) - Biomembranes, 1758(2006)1815-1822.

DY-676 in in-vivo imaging:
Lisy M.-R., Schüler E., Lehmann F., Czerney P., Kaiser W.A., Hilger I., Diagnosis of peritonitis using near-infrared optical imaging of in vivo labeled monocytes-macrophages, Journal of Biomedical Optics, 11(2006)064014, 9 pages.

DY-647-labeled streptavidin:
Kusnezow W., Syagailo Y.V., Rffer S., Baudenstiel N., Gauer C., Hoheisel J.D., Wild D., Goychuk I., Optimal Design of Microarray Immunoassays to Compensate for Kinetic Limitations, Molecular & Cellular Proteomics, 5.9(2006)1681-96.

DY-547 and DY-648-labeled benzylguanines:
Keppler A., Arrivoli C., Sironi L., Ellenberg J., Fluorophores for live cell imaging of AGT fusion proteins across the visible spectrum, BioTechniques, 41(2006)167-75.

DY-547 and DY-631 in confocal microscopy:
Michalakis S., Reisert J., Geiger H., Wetzel C., Zong X., Bradley J., Spehr M., Huellt S., Gerstner A., Pfeifer A., Hatt H., Yau K.-W., Biel M., Loss of CNGB1 Protein Leads to Olfactory Dysfunction and Subciliary Cyclic Nucleotide-gated Channel Trapping, J. Biol. Chem., 281(2006)35156-66.

Recommended literature

DY-521XL in duplex-RT-PCR:
Dreier J., Stoermer M., Maede D., Burckhardt S., Kleesiek K., Enhanced Reverse Transcription-PCR Assay for Detection of Norovirus Genogroup I, Journal of Clinical Microbiology, 44(2006)2714-20.

DY-630 labeled peptide to study GPCRs:
Schneider E., Mayer M., Ziemek R., Li L., Hutzler C., Bernhardt G., Buschauer A., A Simple and Powerful Flow Cytometric Method for the Simultaneous Determination of Multiple Parameters at G Protein-Coupled Receptor Subtypes, ChemBioChem, 7(2006)1400-9.

DY-636 in a SNP hairpin probe:
Marmé N., Friedrich A., Denapaite D., Hakenbeck R., Knemeyer J.-P., Single nucleotide polymorphism analysis using different colored dye dimer probes, Chemical Physics Letters, 428(2006)440-5.

DY-520XL in cross correlation FCS:
Kosturko L.D., Maggipinto M.J., Korza G., Lee J.W., Carson J.H., Barbarese E., Heterogeneous Nuclear Ribonucleoprotein (hnRNP) E1 Binds to hnRNP A2 and Inhibits Translation of A2 Response Element mRNAs, Mol. Biol. Cell, 17(2006)3521-33.

DY-630-biotin in single molecule detection:
Jung S., Angerer B., Loescher F., Niehren S., Winkle J., Seeger S., Biotin-Functionalized Cellulose- Based Monolayers as Sensitive Interfaces for the Detection of Single Molecules, ChemBioChem, 7(2006)900-3.

DY-647 and DYQ-660 as FRET pair:
Käppel N.D. , Dankbar D.M., Gauglitz G., DNA Quantification in Nanoliter Volumes, Microchim Acta , 154(2006)65-71.

DY-633-neutravidin as control on peptide microarrays:
Andresen H., Grötzinger C., Zarse K., Kreuzer O.J., Ehrentreich-Förster E., Bier F.F., Functional peptide microarrays for specific and sensitive antibody diagnostics, Proteomics, 6(2006)1376-84.

DY-633-streptavidin
Andresen H., Zarse K., Grötzinger C., Hollidt J.M., Ehrentreich-Förster E., Bier F.F., Kreuzer O.J., Development of peptide microarrays for epitope mapping of antibodies against the human TSH receptor, Journal of Immunological Methods, 315(2006)11-18.

DY-781 in sequencing application:
Rothenstein D., Haible D., Dasgupta I., Dutt N., Patil B.L., Jeske H.,Biodiversity and recombination of cassava-infecting begomoviruses from southern India, Archives of Virology, 151(2006)55-69.

DY-681-labeled primers in asymmetric PCR:
de Almeida R.A., Heuser T., Blaschke R., Bartram C.R., Janssen J.W.G., Control of MYEOV Protein Synthesis by Upstream Open Reading Frames, J. Biol. Chem, 281(2006) 695-704.

DY-633-labeled primers for microarray applications:
Sauer U., Preininger C., Hany-Schmatzberger R., Quick and simple: quality control of microarray data, Bioinformatics, 21(2005)1572-8.

Recommended literature

DY-630 in DNA- and protein arrays:
Preininger C., Sauer U., Dayteg J., Pichler R., Optimizing processing parameters for signal enhancement of oligonucleotide and protein arrays on ARChip Epoxy, Bioelectrochemistry, 67(2005)155 - 162.

DY-633-labeled peptides:
von Nickisch-Rosenegk M., Ehrentreich-Forster E., Strehlo R., Christmann A., Bier F.F., Chemically synthesized zinc finger molecules as nano-addressable probes for double-stranded DNAs, Journal of Nanobiotechnology, 3(2005)5.

Detection of DY-681-labeled proteins:
Arndt V., Daniel C., Nastainczyk W., Alberti S., Höhfeld J., BAG-2 Acts as Inhibitor of the Chaperone-associated Ubiquitin Ligase CHIP, Molecular Biology of the Cell, 16(2005)5891-5900.

DY-547 and DY-631 in microscopy:
Michalakis S., Geiger H., Haverkamp S., Hofmann F., Gerstner A., Biel M., Impaired Opsin Targeting and Cone Photoreceptor Migration in the Retina of Mice Lacking the Cyclic Nucleotide-Gated Channel CNGA3, Investigative Ophthalmology & Visual Science, 46(2005)1516-1524.

DY-547 in microscopy:
Hüttl S., Michalakis S., Seeliger, Luo D.-G., Acar N., Geiger H., Hudl K., Mader R., Haverkamp S., Moser M., Pfeifer A., Gerstner A., Yau K.-W., Biel M., Impaired Channel Targeting and Retinal Degeneration in Mice Lacking the Cyclic Nucleotide-Gated Channel Subunit CNGB1, The Journal of Neuroscience, 25(2005)130-138.

DY-681 and DY-781 in sequencing application:
Kaltenpoth M., Strohm E., Gadau J., Polymorphic microsatellite markers for a solitary digger wasp, the European beewolf (Philanthus triangulum; Hymenoptera, Sphecidae), Molecular Ecology Notes 4(2004)589-592.

Review:
Peng X., Draney D., Near-IR fluorescent dyes for biological applications, LabPlus International, April/May 2004.

EVOblue™30 in TIRF-microscopy:
Ruckstuhl T., Seeger S., Attoliter detection volumes by confocal total-internal-reflection fluorescence microscopy, Optics Letters, 29(2004)568-571.

Detection of DY-630-Maleimid-labeled proteins:
Diekmann S., Siegmund G., Roecker A., Klemm D.O., Regioselective nitrilotriacetic acid-cellulose-nickel-complexes for immobilisation of His6-tag proteins, Cellulose, 10(2003)53-63.

DY-630 on DNA-microarrays:
Preininger C., Sauer U., Quality control of chip manufacture and chip analysis using epoxy-chips as model, Sensors and Actuators B, 90(2003)98-103.

Optical properties of DY-630 and DY-635:
Czerney P., Lehmann F., Wenzel M., Buschmann V., Dietrich A., Mohr G.J., Taylor-Made Dyes for Fluorescence Correlation Spectroscopy (FCS), Biological Chemistry, 382(2001)495-498.

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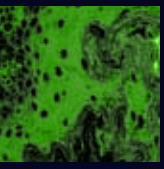

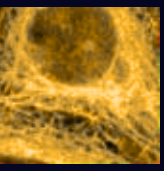

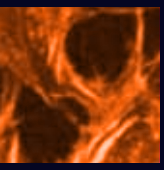

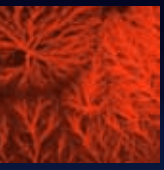

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