Educational Kits

blirt DNA GDAŃSK

Spending a lot of time preparing for your labs?

We save you time by providing complete scenarios of the experiment and eliminate the need for sample preparation.

EDUCATIONAL KITS

The educational kits are specially designed training packages for laboratory classes in the following subjects:

- **molecular biology**
- **genetic engineering**
- **molecular diagnostics**

Each kit contains components necessary for conducting proposed experiments and it also encloses detailed instructions for use (1 for the teacher and 6 for students). The instruction for a teacher has additional theoretical introduction and description of expected results. The kits are prepared for laboratory experiments carried out in six group's consisting of 2-3 students per group. A single kit contains 6 sets of components necessary to carry out all experiments planned for the particular topic.

We offer you the following subject matters:

- DNA/RNA extraction
- Electrophoresis
- Molecular biology
- PCR technique
- Genotyping

The educational kits were developed in two versions with regard to size:

- Sufficient for 1 exercise
- Sufficient for 5 exercises

We design and prepare educational kits at your request.

blirt DNA GDAŃSK

	PRODUCT / TECHNIQUES	Genomic DNA isolation	Plasmid DNA isolation	RNA isolation	DNA/RNA purification	DNA MW determination	Restriction enzyme digestion	DNA ligation	Agarose gel electrophoresis	Polyacrylamide gel electrophoresis	PCR optimisation	Inhibitors of the PCR	PCR enhancers	Singleplex PCR	Multiplex PCR	Nested PCR	RAPD	PCR-RFLP	ITS PCR	PCR MP	ADSRRS	Cat. No. 1 class, 5 classes
DNA/RNA ISOLATION	*Easy*Lation Plasmid DNA		✓		✓				✓													DY81, DY815
	*Easy*Lation Genomic DNA	✓			✓				✓													DY80, DY805
	*Easy*Lation Total RNA			✓	✓				✓													DY82, DY825
	*Easy*Lation DNA Gel-out				✓				✓													DY84, DY845
ELECTRO-PHORESIS	*Easy*Phoresis Agarose					✓			✓													DY41
	*Easy*Phoresis Polyacrylamide					✓				✓												DY43
MOLECULAR BIOLOGY	*Easy*MolBio Restriction Mapping					✓	✓		✓													DY77,DY775
	*Easy*MolBio Plasmid Isolation & Restriction		✓		✓	✓	✓		✓													DY83, DY835
	*Easy*MolBio Digestion & Gel-out				✓	✓	✓		✓													DY75, DY755
	*Easy*MolBio DNA Size Determination					✓			✓													DY78, DY785
	*Easy*MolBio Digestion & Ligation				✓	✓	✓	✓	✓													DY79, DY795
PCR TECHNIQUE	*Easy*PCR I					✓			✓		✓			✓								DY45, DY455
	*Easy*PCR II					✓			✓			✓		✓								DY46, DY465
	*Easy*PCR III					✓			✓				✓	✓								DY47, DY475
	*Easy*PCR MULTIPLEX					✓			✓					✓	✓							DY50, DY505
	*Easy*PCR NESTED					✓			✓					✓		✓						DY51, DY515
	*Easy*PCR Salmonella					✓			✓					✓								DY20A, DY205A
		✓				✓			✓					✓								DY20, DY205
	*Easy*PCR XY					✓			✓					✓								DY10A, DY105A
		✓				✓			✓					✓								DY10, DY105
	*Easy*PCR HIV					✓			✓					✓								DY25A, DY255A
		✓				✓			✓					✓								DY25, DY255
GENOTYPING	*Easy*Genotyping RAPD					✓				✓							✓					DY61, DY615
	*Easy*Genotyping PCR-RFLP Acinetobacter					✓	✓		✓	✓				✓				✓				DY60, DY605
	*Easy*Genotyping PCR-RFLP S. aureus					✓	✓		✓					✓				✓				DY87, DY875
	*Easy*Genotyping ITS PCR					✓			✓					✓					✓			DY62, DY625
	*Easy*Genotyping PCR MP					✓	✓	✓		✓				✓						✓		DY63, DY635
	*Easy*Genotyping ADSRRS					✓	✓	✓		✓				✓							✓	DY64, DY645

DNA/RNA isolation

The aim of the offered educational kits is to introduce students to the isolation and purification methods of the nucleic acids (plasmid and genomic DNA fragments and RNA).

Each kit contains 7 laboratory protocols (including one version for the teacher with additional information), reagents for an agarose gel electrophoresis (DNA gel loading buffer 6x Green, 50x TAE buffer, agarose) and other necessary reagents listed below.

***Easy*Lation Plasmid DNA**
Plasmid DNA isolation

Aim: to introduce students to the extraction and purification methods of plasmid DNA. It is illustrated with an example of alkaline lysis and the ability of DNA to bind to the silica filters in the conditions of a high concentration of chaotropic salts. Isolates are subjected to an agarose gel electrophoresis in order to compare extraction efficiencies and purity of the extracted DNA with the plasmid DNA standards.

***Easy*Lation Plasmid DNA consists of:**
- Cell pellets
- 6 reagent sets for the plasmid DNA extraction
- Plasmid DNA standard
- A set of reagents for an agarose gel electrophoresis

***Easy*Lation Genomic DNA**
Educational kit for genomic DNA extraction from buccal swabs

Aim: to introduce students to the extraction and purification methods of the human genomic DNA from buccal swabs. The genomic DNA is purified on minicolumns with a special filter ensuring selective DNA binding. All impurities are washed away with a special wash buffers. The purified DNA samples are subjected to an agarose gel electrophoresis in order to check efficiency of the extraction as well as purity of the genomic DNA.

***Easy*Lation Genomic DNA consists of:**
- Sterile swab sticks
- 6 reagent sets for the genomic DNA extraction from buccal swabs
- Tube with human genomic DNA control
- A set of reagents for an agarose gel electrophoresis

***Easy*Lation Total RNA**
Total RNA isolation

Aim: to introduce students to extraction methods of total RNA (rRNA, mRNA and tRNA). The isolated total RNA samples are subjected to the agarose gel electrophoresis. The procedure does not require phenol or chloroform use.

***Easy*Lation Total RNA consists of:**
- Cell pellets
- 6 reagent sets for the bacterial total RNA extraction
- A set of reagents for an agarose gel electrophoresis

***Easy*Lation DNA Gel-out**
Isolation and purification of DNA fragments from agarose gel

Aim: to introduce students to the DNA isolation methods and purification from an agarose gel. An agarose block containing DNA of interest is solubilised in a special solution and then purified on a minicolumn with a silica filter. The purified DNA samples are then subjected to the second agarose gel electrophoresis in order to confirm size of the isolated DNA fragments and to check extraction efficiency and purity of the analysed DNA samples.

***Easy*Lation DNA Gel-out consists of:**
- 6 tubes with DNA fragments
- 6 reagent sets for the DNA isolation from an agarose gel
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

Electrophoresis

The aim of the offered educational kits is to introduce students to the agarose and polyacrylamide gel electrophoresis techniques.

*Easy*Phoresis Agarose
Agarose gel electrophoresis kit

The agarose gel electrophoresis is a basic method used for identification and separation of DNA fragments. The DNA molecules are negatively charged and migrate towards the positively charged anode with the speed depending on the molecular weight. It allows the separation of the DNA fragments differing in a base pair number. The molecular weight can be determined by comparison to a special molecular weight DNA ladder (included in the kit). The *Easy*Phoresis Agarose educational kit allows separation of four different DNA fragments (along with the DNA ladder) and their molecular weights estimation.

***Easy*Phoresis Agarose kit (for 20 separations in 1% agarose gels or 10 in 2% gels) consists of:**

- Running buffer (50x TAE)
- Agarose
- Molecular Weight DNA Ladder
- 4 different DNA samples for size determination
- DNA Gel Loading Buffer (6x Green)
- 7 laboratory protocols (including one version for the teacher with additional information)

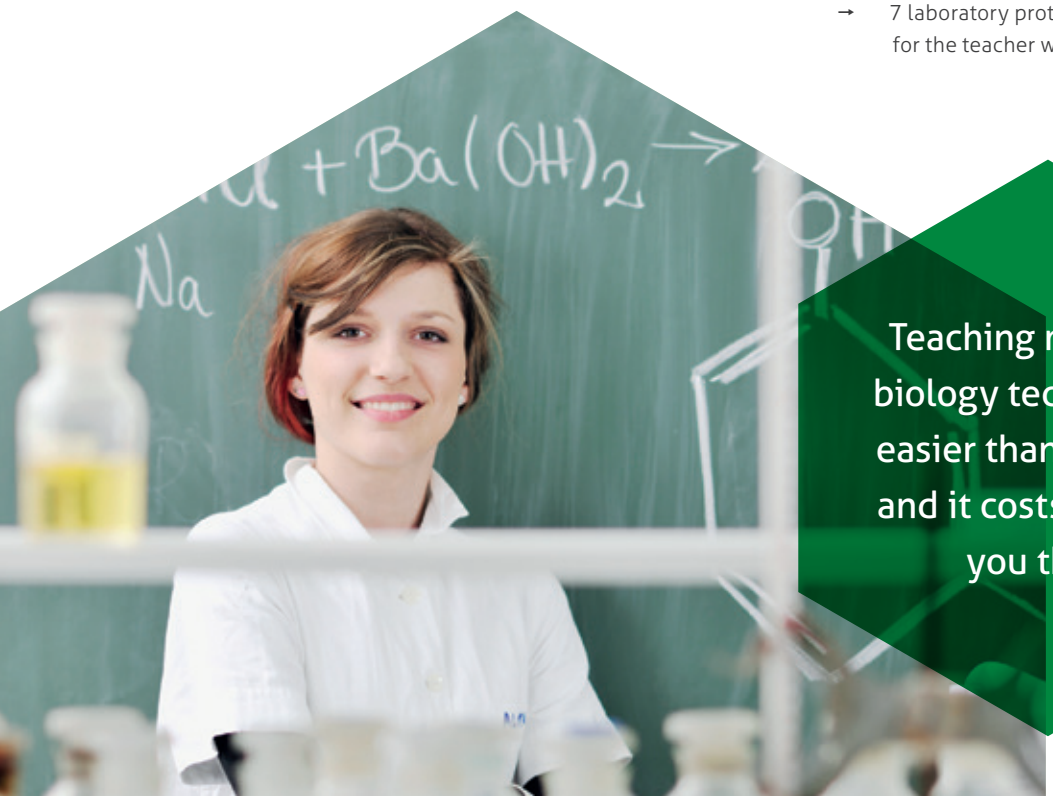
*Easy*Phoresis Polyacrylamide
Polyacrylamide gel electrophoresis kit

The polyacrylamide gel electrophoresis is a basic method used for identification and separation of DNA fragments. The polyacrylamide gels are used for separation and analysis of relatively small DNA fragments, oligonucleotides, RNA and proteins. Thanks to its higher sensitivity and resolution, the method is very useful in various genotyping techniques.

The DNA molecules are negatively charged and migrate towards the positively charged anode (in the top-to-bottom direction) with a speed depending on a molecular weight. It allows separation of the DNA fragments differing in the base pair number. The molecular weight can be determined by comparison to a special molecular weight DNA ladder (included in the kit). The *Easy*Phoresis Polyacrylamide educational kit allows separation of four different DNA fragments (along with the DNA ladder) and their molecular weight estimation.

***Easy*Phoresis Polyacrylamide kit (for 20 separations in 6% polyacrylamide gels) consists of:**

- Running buffer (10x TBE)
- Solutions for a polyacrylamide preparation
- Molecular Weight DNA Ladder
- 4 different DNA samples for size determination
- DNA Gel Loading Buffer (6x Green)
- 7 laboratory protocols (including one version for the teacher with additional information)



Teaching molecular biology techniques is easier than you think and it costs less than you think!

Molecular biology

The aim of the offered educational kits is to introduce students to the molecular biology techniques, such as: DNA molecular weight determination, restriction enzyme digestion and DNA ligation.

Each kit contains 7 laboratory protocols (including one version for the teacher with additional information), reagents for an agarose gel electrophoresis (DNA gel loading buffer 6x Green, 50x TAE buffer, agarose) and other necessary reagents listed below.

*Easy*MolBio Restriction Mapping
Restriction analysis of plasmid DNA

Aim: to introduce students to the restriction enzymes and their application in the nucleic acid analyses. The kit allows conducting a restriction analysis of a plasmid DNA utilising two different restriction enzymes (used separately or together). After the digestion, DNA samples are subjected to an agarose gel electrophoresis and an acquired electrophoretic profile is analysed against a molecular weight DNA ladder.

***Easy*MolBio Restriction Mapping consists of:**
- → Reagents for the digestion of plasmid DNA (plasmid DNA, buffers and restriction enzymes)
- → Two different Molecular Weight DNA Ladders
- → A set of reagents for an agarose gel electrophoresis

*Easy*MolBio Plasmid Isolation & Restriction
Restriction analysis of plasmid DNA

Aim: to introduce students to the methods of plasmid DNA extraction and purification and also to the restriction enzymes and their application in the nucleic acid analyses. The plasmid DNA is isolated with the alkaline lysis utilising the ability of DNA to bind to the silica filters in the conditions of high concentration of the chaotropic salts. The obtained isolates are subjected to an agarose gel electrophoresis in order to compare extraction efficiencies and purity of the extracted DNA against a plasmid DNA standard. Afterwards the selected plasmid DNA samples (of appropriate efficiency and purity) are subjected to the restriction analysis utilising two different restriction enzymes (used separately or together). After the digestion, DNA samples are subjected to the agarose gel electrophoresis and the electrophoretic profile is analysed against a molecular weight DNA ladder.

***Easy*MolBio Plasmid Isolation & Restriction consists of:**
- → 6 reagent sets for the plasmid DNA extraction
- → Reagents for the plasmid DNA digestion (plasmid DNA, buffers, restriction enzymes and water)
- → Two different Molecular Weight DNA Ladders
- → A set of reagents for an agarose gel electrophoresis

*Easy*MolBio Digestion & Gel-out
Digestion and isolation of the DNA fragments from the agarose gel

Aim: to introduce students to the methods of DNA purification from an agarose gel and to a restriction enzyme activity. The first part of the exercise is digestion of a plasmid DNA with an appropriate restriction enzyme. After digestion and separation of the products in the electrophoretic field, students extract selected DNA fragments from the agarose gel. The purified DNA samples are then subjected to the second agarose gel electrophoresis in order to confirm size of the isolated DNA fragments and to check the extraction efficiency and the purity of the extracted DNA samples.

***Easy*MolBio Digestion & Gel-out consists of:**
- → Reagents for the plasmid DNA digestion (plasmid DNA, buffers and restriction enzymes, water)
- → 6 reagent sets for the DNA isolation from the agarose gel
- → Two different Molecular Weight DNA Ladders
- → A set of reagents for an agarose gel electrophoresis

*Easy*MolBio DNA Size Determination
Molecular weight determination of DNA fragments

Aim: to carry out gel electrophoresis of samples containing DNA fragments of unknown sizes and to determine a molecular weight of the analysed DNA. Along with the tested samples a molecular weight DNA ladder is also loaded onto the same gel. By measuring the length of a migration path of each DNA fragment (band) of the ladder, the calibration curve is created, which will enable the molecular weight calculation of the analysed DNA.

***Easy*MolBio DNA Size Determination consists of:**
- → 6 sets of tubes containing DNA of unknown sizes (3 tubes in each set)
- → Two Molecular Weight DNA Ladders
- → A set of reagents for an agarose gel electrophoresis

*Easy*MolBio Digestion & Ligation
Digestion and ligation of DNA fragments

Aim: to show the activity of the phage T4 ligase in the presence of DNA fragments acquired after plasmid digestion. The first part of the exercise consists of digestion of a plasmid DNA with a restriction enzyme leaving cohesive ends and one giving blunt ends. After digestion, DNA samples are purified (DNA Clean-up) and then subjected to a ligation reaction. Next, samples are subjected to an agarose gel electrophoresis in order to compare sizes and number of the DNA fragments in samples after both digestion and ligation.

***Easy*MolBio Digestion & Ligation consists of:**
- → Reagents for the plasmid DNA digestion (plasmid DNA, buffers and restriction enzymes)
- → Reagents for the DNA purification after enzymatic digestion (DNA Clean-up)
- → Reagents for the DNA ligation (buffer and the T4 DNA ligase)
- → Two Molecular Weight DNA Ladders
- → A set of reagents for an agarose gel electrophoresis

PCR technique

The aim of the offered educational kits is to introduce students to the PCR techniques – a standard among the molecular methods, and its various applications. Our educational kits cover the following topics: optimisation of the reaction, determination of potential inhibiting substances, presentations of the possibilities of the PCR enhancers, introduction to various PCR methods and their potential applications.

Each kit contains 7 laboratory protocols (including one version for the teacher with additional information), reagents for an agarose gel electrophoresis (DNA gel loading buffer 6x Green, 50x TAE buffer, agarose) and other necessary reagents listed below.

*Easy*PCR I – PCR reaction optimisation

Aim: presentation of an influence of changing reaction components onto the reaction efficiency. The following features will be tested: composition of the reaction buffer, DNA polymerase, primers, magnesium and nucleotides (dNTPs) concentration and the amount of template.

***Easy*PCR I consists of:**
- → 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- → Molecular Weight DNA Ladder
- → A set of reagents for the agarose gel electrophoresis

*Easy*PCR II – Inhibitors of the PCR reaction

Aim: to introduce students to the substances which can inhibit the PCR reaction, determine the minimal inhibiting concentrations and their origin in the analysed samples.

***Easy*PCR II consists of:**
- → 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water, PCR inhibitors)
- → Molecular Weight DNA Ladder
- → A set of reagents for an agarose gel electrophoresis

*Easy*PCR III – PCR enhancers

Aim: to introduce students to the substances which can enhance the PCR reaction (such as: Tween 20, DMSO, glycerol, betaine, BSA, PCR Anti-inhibitor) and to present their influence onto the PCR efficiency.

***Easy*PCR III consists of:**
- → 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water, PCR enhancers)
- → Molecular Weight DNA Ladder
- → A set of reagents for an agarose gel electrophoresis

*Easy*PCR MULTIPLEX

Aim: to introduce students to the Multiplex PCR technique, a PCR variation which enables simultaneous amplification of two or more various DNA fragments with more than one primer set. In this way DNA from more than one organism can be detected or several DNA fragments within one genome can be amplified, so that more information can be extracted from a sample. The aim of this class is to prepare both SIMPLEX and MULTIPLEX PCR reactions in order to identify the *Staphylococcus aureus* strains among the supplied DNA samples and to determine their resistance to the methicillin.

***Easy*PCR MULTIPLEX consists of:**

- 6 sets of the SIMPLEX and MULTIPLEX PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

*Easy*PCR NESTED

Aim: to introduce students to the nested PCR technique. The technique is commonly used for the diagnostic purposes. It is characterised by greater sensitivity and specificity in comparison to the traditional PCR technique. A PCR product from the first reaction (PCR-OUT) is subjected to the successive amplification with a different, so called "inner", primer set (PCR-IN). The aim of this experiment is to detect DNA from cytomegalovirus among the supplied DNA samples with the nested PCR technique.

***Easy*PCR NESTED consists of:**

- 6 sets of the PCR reagents for two successive reactions (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

*Easy*PCR Salmonella

Detection of the *Salmonella* bacteria utilising the PCR technique

versions with or without reagents for DNA extraction

Aim: to carry out a genomic DNA extraction and a PCR reaction of the isolated templates in order to confirm the presence of DNA form bacteria of the genus *Salmonella*. The procedure is based on the amplification of the 429 bp DNA sequence unique for the *Salmonella* spp.

***Easy*PCR Salmonella consists of:**

- 6 sets of reagents for the genomic DNA extraction from a cell culture (NOT in the DY20A and DY205A options)
- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, positive control, buffer, $MgCl_2$, water and templates)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

*Easy*PCR XY

Determination of the human sex utilising the PCR technique

versions with or without reagents for DNA extraction

Aim: to carry out a genomic DNA extraction and a PCR reaction of the isolated templates in order to determine the human sex from tested DNA. The procedure is based on an amplification of the human amelogenin gene. The gene is shorter in the Y chromosome by 189 bp than it is on the X chromosome. This difference allows sex determination by the PCR technique. PCR products: male – 977 and 788 bp, female – 977 bp.

***Easy*PCR XY consists of:**

- 6 sets of reagents for the genomic DNA extraction from swabs (NOT in the DY10A and DY105A options)
- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, positive control, buffer, $MgCl_2$, water and templates)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

E*asy*PCR HIV

Detection of the HIV resistance utilising the PCR technique

versions with or without reagents for DNA extraction

Aim: to carry out a genomic DNA extraction and a PCR reaction of the isolated templates in order to detect a mutation in the *ccr5* gene, which confers a human HIV resistance. The *ccr5* protein is the HIV cell receptor, one of the host proteins essential for the cell penetration by the HIV. A 32bp-deletion in one allele of this gene does not confer resistance but decreases the susceptibility for the infection and delay progression of AIDS. The mutation in both alleles confers the resistance (it protects from an HIV infection), although in very rare cases it does not prevent the disease. The detection is based on an amplification of the DNA fragment of the *ccr5* gene which is:

- 220 bp long – for homozygotes without the mutation
- 188 bp long – for homozygotes with the mutation
- 220 and 188 bp long – for heterozygotes with the mutation

***Easy*PCR HIV consists of:**

- 6 sets of reagents for the genomic DNA extraction from swabs (NOT in the DY25A and DY255A options)
- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, positive control, buffer, $MgCl_2$, water and templates)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

Genotyping

The aim of the offered educational kits is to introduce students to the various techniques of genotyping, such as: RAPD, PCR-RFLP, ITS PCR, PCR MP and ADSRRS.

Each kit contains 7 laboratory protocols (including one version for the teacher with additional information) and the reagents for the polyacrylamide and agarose gel electrophoresis:

- DNA gel loading buffer (6x Green)
- Running buffer for an agarose (50x TAE) or a polyacrylamide (10x TBE) gel electrophoresis
- Reagents necessary for an agarose gel (agarose) and a polyacrylamide gel (acrylamides, TEMED, ammonium persulfate) preparation

*Easy*Genotyping RAPD

Bacterial strains genotyping with the RAPD method

Aim: to introduce students to the methods of genotyping illustrated with an example of RAPD (Random Amplified Polymorphic DNA). It is one of the most popular PCR methods of fingerprinting. Because of its rapidity and simplicity, it found a number of applications in the epidemiological studies. The RAPD method is based on the PCR technique. One or more primers bind to a template randomly with a specified efficiency with more or less complementary sequences in a low annealing temperature. As a result of the PCR reaction a genotype profile is obtained enabling analysis and comparison of individual isolates. The aim of this experiment is to conduct genotyping of the supplied DNA samples of the clinical strains of *Klebsiella oxytoca*.

***Easy*Genotyping RAPD consists of:**

- 6 sets of the PCR reagents for RAPD (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- Molecular Weight DNA Ladder
- A set of reagents for a polyacrylamide gel electrophoresis

*Easy*Genotyping PCR-RFLP Acinetobacter

Genotyping of the *Acinetobacter sp.* strains with the PCR-RFLP

Aim: to introduce students to the PCR-RFLP method (PCR – Restriction Fragment Length Polymorphism). It is used for intra- and interspecies genotyping of bacterial and fungal strains. The method is carried out in 2 steps. In the first step a region of interest is amplified and a PCR product of specified size is obtained. In the next step it is digested with one or more restriction enzymes. As a result of the digestion, a restriction profile is obtained, specific for a particular isolate, which allows assigning the strain to a particular species or genotype. The aim of this class is to conduct genotyping of the supplied DNA samples of the clinical strains of *Acinetobacter sp.* and to assign them to the individual genotype groups.

***Easy*Genotyping PCR-RFLP Acinetobacter consists of:**

- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- 6 sets of reagents for the restriction digestion (restriction enzyme and reaction buffer)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis
- A set of reagents for a polyacrylamide gel electrophoresis

*Easy*Genotyping PCR-RFLP S. aureus

Genotyping of the *Staphylococcus aureus* strains with the PCR-RFLP method

Aim: to introduce students to the PCR-RFLP method (PCR – Restriction Fragment Length Polymorphism). It is used for intra- and interspecies genotyping of bacterial and fungal strains. The method is carried out in 2 steps. In the first step a region of interest is amplified and a PCR product of specified size is obtained. In the next step it is digested with one or more restriction enzymes. As a result of the digestion, a restriction profile is obtained, specific for a particular isolate, which allows assigning the strain to a particular species or genotype. The aim of this experiment is to conduct genotyping of the supplied DNA samples of the clinical strains of *Staphylococcus aureus* and to assign them to the individual genotype groups.

***Easy*Genotyping PCR-RFLP S. aureus consists of:**

- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- 6 sets of reagents for restriction digestion (restriction enzyme and reaction buffer)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose and polyacrylamide gel electrophoresis

***Easy*Genotyping ITS PCR**
genotyping of bacterial strains
with the ribotyping method

Aim: to introduce students to the ribotyping methods. Microorganism differentiation is often based on the genes encoding ribosomal RNA (rRNA) of small and large subunit of the ribosome. These genes, forming the *rrn* operon, are characteristic for all bacterial organisms. Between the sequences coding the ribosomal subunits 16S, 23S and 5S rRNA, there are polymorphic regions which vary in size and sequence. These regions of the operon are convenient molecular targets used in the phylogenetic studies. The ITS PCR belongs to the ribotyping methods and it analyses a polymorphic region between the 16S and 23S rRNA coding sequences. The aim of this experiment is to use the ribotyping for the intra- and interspecies differentiation of the supplied bacterial strains (DNA from 6 different species, 3 isolates each).

***Easy*Genotyping ITS PCR consists of:**
- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- Molecular Weight DNA Ladder
- A set of reagents for an agarose gel electrophoresis

***Easy*Genotyping PCR MP**
genotyping with the PCR Melting Profile method

Aim: to introduce students to the ligation mediated PCR (LM PCR) methods illustrated with an example of PCR MP (PCR Melting Profile). The PCR MP method is used for genotyping of bacterial and fungal strains. The method is based on the fact that for the DNA fragment to be amplified by the PCR a complete denaturation is needed. The amplification of the restricted number of DNA fragments is ensured by the lower denaturation temperature in comparison to a traditional PCR reaction. The aim of this experiment is to conduct genotyping of the supplied bacterial DNA samples and to assign them to the individual genotypes.

***Easy*Genotyping PCR MP consists of:**
- 6 sets of the PCR reagents for PCR (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- 6 sets of reagents for restriction digestion (restriction enzyme and reaction buffer)
- 6 sets of reagents for ligation (oligonucleotides, buffer and T4 DNA ligase)
- Molecular Weight DNA Ladder
- A set of reagents for a polyacrylamide gel electrophoresis

***Easy*Genotyping ADSRRS**
genotyping of bacterial strains
with the ADSRRS-fingerprinting method

Aim: to introduce students to the ligation mediated PCR (LM PCR) methods illustrated with an example of ADSRRS (Amplification of DNA Surrounding Rare Restriction Sites). The ADSRRS method is used in genotyping of the bacterial strains. The limitation of the amplified fragment number is achieved by the suppression of the PCR reaction, which happens when the intramolecular homologous hybridisation of the DNA fragments occurs. The aim of this experiment is to conduct genotyping of the supplied bacterial DNA samples and to assign them to the individual genotypes.

***Easy*Genotyping ADSRRS consists of:**
- 6 sets of the PCR reagents (DNA polymerase, dNTPs, primers, DNA templates, buffer, $MgCl_2$, water)
- 6 sets of reagents for restriction digestion (restriction enzymes, reaction buffer and water)
- 6 sets of reagents for ligation (oligonucleotides, buffer and T4 DNA ligase)
- Molecular Weight DNA Ladder
- A set of reagents for a polyacrylamide gel electrophoresis

Blirt S.A., DNA-Gdańsk
Trzy Lipy 3/1.38, 80-172 Gdańsk, Poland
www.dnagdansk.com | info@dnagdansk.com
T: +48 58 739 61 50 | F: +48 58 739 61 51