



THE MODULE HANDBOOK

FACULTY OF

Genetika Molekuler

Module code	SPSBT-6103
Module level	1 st year of Graduate Program in Biotechnology
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/term	Ganjil
Module coordinator(s)	Prof. Ir. Triwibowo Yuwono, Ph. D.
Lecture(s)	1. Prof. Ir. Triwibowo Yuwono, Ph.D. 2. Sudjadi, Prof. Dr., M.S., Apt. 3. Ir. Donny Widiyanto, Ph.D.
Language	English
Classification within the Curriculum	Compulsory course
Teaching format/class hours per week during the semester	Membaca buku acuan dan mempelajari materi kuliah dari slide presentasi yang sudah dibagikan dosen melalui WAG Kelas
Workload	
Credit points	2 credits
Requirements	-
Learning goals/ competencies	Memahami Organisasi Genom, DNA Replication, Regulation of Transcription, dan Transcription in Eukaryot Memahami mekanisme kerusakan DNA dan penyebabnya, perbaikannya serta pengaruhnya jika terjadi mutasi dengan beberapa contohnya. Memahami mekanisme transkripsi sel prokaryotik pada gena <i>carbon energy regulon</i> dan promoter lainnya serta pengaruh pemberian antibiotik. Memahami mekanisme translasi sel prokaryotik baik gena tunggal maupun operon, kemungkinan terjadinya frameshift pada rekayasa fusi protein, serta pengaruh pemberian antibiotik pada translasi. Memahami mekanisme pengendalian ekspresi gena prokaryotik akibat adanya induser maupun protein aktivator serta sistem pengendalian dengan etenuator. Memahami Transposable Genetic Elements, dan Recombination



THE MODULE HANDBOOK

FACULTY OF

	Learning outcome : LO-2 Menguasai pengetahuan biologi molekular yang meliputi biologi sel, fisiologi molekular, dan genetika molekular LO-3 Menguasai pengetahuan mengenai interaksi antara sel, jaringan, organ, dan jasad hidup dengan lingkungan LO-4 Menguasai dasar rekayasa molekular dan selular, yang antara lain meliputi rekayasa genom, gen, protein, dan metabolit
Content	Mata kuliah ini membahas tentang organisasi materi genetik asam nukleat sebagai materi genetik struktur dan fungsi DNA maupun RNA, serta replikasi DNA struktur gen transkripsi dan translasi hingga regulasinya serta transfer materi genetik. 1. Organisasi Genom 2. DNA Replication 3. Regulation of Transcription 4. Transcription in Eukaryot 5. Kerusakan DNA dan Perbaikan 6. Transkripsi dan translasi pada prokariot 7. Pengendalian ekspresi pada prokariot 8. Transposable Genetic Elements 9. Recombination
Study/exam achievements	a. Kuis : 5% b. Tugas Individu : 35% c. Tugas Kelompok : 10% d. Ujian Tengah Semester : 25% e. Ujian Akhir Semester : 25%
Forms of media	Online meeting apps, Buku Genetika Molekuler, Notebook and LCD
Literature	a. Russell, P.J., 2002. DNA mutation and repair. <i>RUSSELL P J. Genetics</i>, 566. - b.



THE MODULE HANDBOOK

FACULTY OF

Molecular Genetics

Module code	SPSBT-6103
Module level	1 st year of Graduate Program in Biotechnology
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Courses included in the module, if applicable	-
Semester/term	Ganjil
Module coordinator(s)	Prof. Ir. Triwibowo Yuwono, Ph. D.
Lecture(s)	4. Prof. Ir. Triwibowo Yuwono, Ph.D. 5. Sudjadi, Prof. Dr., M.S., Apt. 6. Ir. Donny Widiyanto, Ph.D.
Language	English
Classification within the Curriculum	Compulsory course
Teaching format/class hours per week during the semester	Topics reading and learning from presentation slide, other materials, journals, and material that have been shared to Class group.
Workload	
Credit points	2 credits
Requirements	-
Learning goals/ competencies	Students are expected to : • <i>Course Outcome 1 (CO)</i> : Understanding Genom organization, DNA Replication, Regulation of Transcription, and Transcription in Eukaryot. • <i>Course Outcome 2 (CO)</i> : Understanding the mechanism of DNA damage, DNA repairing system and causes, mutation along with the examples. • <i>Course Outcome 2 (CO)</i> : Understanding the mechanism of prokaryotic cell transcription on the carbon energy gene regulatory and other promoters and the effect of antibiotics. • <i>Course Outcome 2 (CO)</i> : Understanding the mechanism of translation of prokaryotic cells both single gene and operon, the possibility of frameshift in protein fusion engineering, and the effect of antibiotics on translation. • <i>Course Outcome 2 (CO)</i> : Understand the mechanism of controlling prokaryotic gene expression due to the presence of inducers and activator proteins as well as control systems with etenuators.



THE MODULE HANDBOOK

FACULTY OF

	• <i>Course Outcome 3 (CO) : Understanding Transposable Genetic Elements, and Recombination</i> Learning outcome : LO-2 Mastering knowledge of molecular biology which includes cell biology, molecular physiology, and molecular genetics (CO : 1) LO-3 Mastering knowledge about the interactions between cells, tissues, organs, and living organisms with the environment (CO : 2) LO-4 Mastering the basics of molecular and cellular engineering (CO : 3)
Content	This course discusses the organization of the genetic material of nucleic acids as genetic material, the structure and function of DNA and RNA, as well as DNA replication, transcription and translation, as well as the regulation and transfer of genetic material. 1. Genom organization, 2. DNA Replication, 3. Regulation of Transcription, 4. Transcription in Eukaryot, 5. DNA damage and repair, 6. Prokaryot transcription and translation, 7. Control of gene expression in prokaryot, 8. Transposable Genetic Elements, 9. Recombination
Study/exam achievements	f. Quiz : 5% (CO : 2) g. Individual assessment : 35% (CO : 1,3) h. Group assessment : 10% (CO : 1) i. Midterm exam : 25% (CO : 1) j. Final exam : 25% (CO : 2,3)
Forms of media	Online meeting apps, Buku Genetika Molekuler, Notebook, and LCD
Literature	c. Russell, P.J., 2002. DNA mutation and repair. <i>RUSSELL P J. Genetics</i>, 566. - d.