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| **Calendar (schedule) the implementation of independent works of students** |
| Week / date | Topic title (Independent work of students) | Number of hours | Maximum score |
| 1 | 2 | 3 | 5 |
| 3 | **Independent work of student with teacher 1.**  Consultation on the implementation of IWS 1.**Independent work of student 1.** Make a structural and logical diagram of the read material:[Predictive biomarkers for cancer therapy with PARP inhibitors](https://www.scopus.com/record/display.uri?eid=2-s2.0-84904978889&origin=resultslist&sort=plf-f&src=s&sid=b3caed6ba388cd1f3cbdfc3db1447ef1&sot=autdocs&sdt=autdocs&sl=17&s=AU-ID%287004524079%29&relpos=20&citeCnt=66&searchTerm=) | 1 | 25 |
| 5 | **Independent work of student with teacher 2.** Consultation on the implementation of IWS 1.1**Independent work of student 1.1.** Make a structural and logical diagram of the read materials:Expression of human poly (ADP-ribose) polymerase 1 in Saccharomyces cerevisiae: Effect on survival, homologous recombination and identification of genes involved in intracellular localizationNovel Inhibitors of Poly(ADP-ribose) Polymerase/PARP1 and PARP2 Identified Using a Cell-based Screen in Yeast[Characterization of DNA ADP-ribosyltransferase activities of PARP2 and PARP3: New insights into DNA ADP-ribosylation](https://www.scopus.com/record/display.uri?eid=2-s2.0-85043399955&origin=resultslist&sort=plf-f&src=s&sid=791817d4ff0d010cf4ebdb1ecd1da2c1&sot=autdocs&sdt=autdocs&sl=17&s=AU-ID%287102919262%29&relpos=10&citeCnt=41&searchTerm=) | 1 | 25 |
| 8 | **Independent work of student with teacher 3.** Consultation on the implementation of IWS 2.**Independent work of student 2.** Make a structural and logical diagram of the read material:[Poly(ADP-ribose) polymerases covalently modify strand break termini in DNA fragments in vitro](https://www.scopus.com/record/display.uri?eid=2-s2.0-84994817680&origin=resultslist&sort=plf-f&src=s&sid=791817d4ff0d010cf4ebdb1ecd1da2c1&sot=autdocs&sdt=autdocs&sl=17&s=AU-ID%287102919262%29&relpos=13&citeCnt=55&searchTerm=) | 1 | 20 |
| 10 | **Independent work of student with teacher 4-5.** Consultation on the implementation of IWS 2.1.**Independent work of student 2.1.** Make a structural and logical diagram of the read materials:[Insight into DNA substrate specificity of PARP1-catalysed DNA poly(ADP-ribosyl)ation](https://www.scopus.com/record/display.uri?eid=2-s2.0-85080985794&origin=resultslist&sort=plf-f&src=s&sid=791817d4ff0d010cf4ebdb1ecd1da2c1&sot=autdocs&sdt=autdocs&sl=17&s=AU-ID%287102919262%29&relpos=0&citeCnt=1&searchTerm=)[Role of PARP-catalyzed ADP-ribosylation in the Crosstalk Between DNA Strand Breaks and Epigenetic Regulation](https://www.scopus.com/record/display.uri?eid=2-s2.0-85077166550&origin=resultslist&sort=plf-f&src=s&sid=791817d4ff0d010cf4ebdb1ecd1da2c1&sot=autdocs&sdt=autdocs&sl=17&s=AU-ID%287102919262%29&relpos=2&citeCnt=1&searchTerm=)[DNA is a New Target of Parp3](https://www.scopus.com/record/display.uri?eid=2-s2.0-85043363725&origin=resultslist&sort=plf-f&src=s&sid=791817d4ff0d010cf4ebdb1ecd1da2c1&sot=autdocs&sdt=autdocs&sl=17&s=AU-ID%287102919262%29&relpos=4&citeCnt=26&searchTerm=) | 2 | 30 |
| 12 | **Independent work of student with teacher 6.** Consultation on the implementation of IWS 3.**Independent work of student 3.** Make a structural and logical diagram of the read material:New perspectives on the plant PARP family: Arabidopsis PARP3 is inactive, and PARP1 exhibits predominant poly (ADP-ribose) polymerase activity in response to DNA damage | 2 | 25 |
| 15 | **Independent work of student with teacher 7.** Consultation on the implementation of IWS 3.1.**Independent work of student 3.1.** Make a structural and logical diagram of the read materials:DNA ligase III acts as a DNA strand break sensor in the cellular orchestration of DNA strand break repairPARP-2 is required for efficient base excision DNA repair in association with PARP-1 and XRCC1Involvement of Poly (ADP-ribose) Polymerase-1 and XRCC1/DNA Ligase III in an alternative route for DNA double-strand breaks rejoining | 2 | 25 |
|  | In case of illness, traumas, disabilities, accidents, or scientific/business trips students are allowed to get extra bands over time. Also in these cases, students can select the most comfortable way to do it. All bands will be added to the final grade at the end of the semester. Discussions, disputes, and active participation in classes are highly encouraged. The lecturer can give additional tasks if they are not sure about student's knowledge. |  |  |

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| Information resources | **literature**:1. Benjamin Lewin. Genes/Prentice Hall
2. Griffiths AJF, Gelbart WM, Miller JH, et al. Modern Genetic Analysis.New York: [W. H. Freeman](http://www.whfreeman.com/); 1999.
3. Vogel F. and. Motulsky A. GT. Human Genetics: Problems and Approaches/ Springer Verlag
4. Strachan T & Read A. Human Molecular Genetics/Garland Science
5. W.A. Bickmore. Chromosome Structural analysis: A Practical Approach/ Oxford University Press
6. Brown T. A.Gene Cloning and DNA Analysis: An Introduction/ Blackwell Publishings
7. Primrose, S. B. Twyman R. M. & Old R W. Principles of Gene Manipulation and Genomics/ Blackwell Publishings
8. Howe C. Gene Cloning and Manipulation /Cambridge University
9. Sambrook J. et al. Molecular Cloning: A Laboratory Manual (3- Volume Set)/ CSHL Press

**Internet-resources:** 1. [www.msu-genetics.ru](http://www.msu-genetics.ru)2.[www.rkm.kz/node/802](http://www.rkm.kz/node/802)3.[www.evolbiol.ru/rautian\_epigen.htm](http://www.evolbiol.ru/rautian_epigen.htm) |

Lecturer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Saparbaev M.K.