

# Chemical aspects of the cell

Information general

# SQM5855

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- ***Classes:***

Andrei Leitao, PhD

Tuesday: 2-5 pm.

***More info:***

<https://edisciplinas.usp.br/course/view.php?id=82555>

***References:***

Books listed at the webpage.

Scientific papers discussed during the semester.

***Evaluation process:***

Final exam: 4 points (to be defined during the semester).

Two working groups: 3 points each.

Bruce, A.; Johnson, A.; Lewis, J.; Morgan, D.; Raff, M.; Roberts, K.; Walter, P. "Molecular Biology of the Cell" 6th edition, Garland Science, Taylor & Francis Group, LLC, New York, NY, 2014.

Karp, G. "Cell and Molecular Biology Concepts and Experiments" 7th edition, John Wiley and Sons, Inc., Hoboken, New Jersey, 2013.

Brunton, L.L.; Chabner, B.A.; Knollmann, B.C.

"Goodman & Gilman's Pharmacological Basis of Therapeutics" 12th edition, McGraw-Hill, New York, NY, 2011.

Dömling, A. "Protein-Protein Interactions in Drug Discovery" In: "Methods and Principles in Medicinal Chemistry" Mannhold, R.; Kubinyi, H.; Folkers, G. (Series Ed.) Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2013.

Civjan, N. "Chemical biology: approaches to drug discovery and development to targeting disease" John Wiley & Sons, Inc., Hoboken, New Jersey, 2012.

Schreiber, S.L.; Kappor, T.M.; Wess, G. "Chemical Biology: From Small Molecules to Systems Biology and Drug Design" vol. 1, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, 2007.

Young, D.L.; Michelson, S. "Systems Biology in Drug Discovery and Development" John Wiley & Sons, Inc., Hoboken, New Jersey, 2012.

# Schedule

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| Day       | Topic   |
|-----------|---|
| August    |   |
| 25        | Introduction of the discipline/The cell from a chemical point of view                   |
|           |   |
| September |   |
| 1         | Chemicals that control cell signaling: hormones   |
| 8         | Chemicals that control cell signaling hormones, ATP/GTP, chemoattraction and chemotaxis |
| 15        | Biosynthesis of compounds responsible for biochemical pathways                          |
| 22        | DNA-RNA-Protein synthesis   |
| 28        | DNA-RNA-Protein synthesis 2   |

# Schedule

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| Day             | Topic  |
|-----------------|--|
| <b>October</b>  |  |
| 6               | Working group / Epigenetics and post-translational modifications                               |
| 13              | Shape & structure of the cell  |
| 20              | Compounds that induce cell proliferation, differentiation and death                            |
| 27              | Chemical probes that trigger the cell environment and response for pH, reactive oxygen species |
|                 |  |
| <b>November</b> |  |
| 3               | Working group / Integration of the biological systems and the use of chemical knowledge        |
| 10              | Systems chemical biology   |
| 17              | Systems chemical biology   |
| 24              | Deadline for the final test  |