

Teaching-learning materials compiled by the PARSEL consortium
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Cooperating Institutions and Universities within the PARSEL-Project:



Chemistry in a Class of Its Own: Building Blocks of Life – “To become fit and strong eat eggs all day long” – The Truth about Proteins in My Body

A Module for Science Instruction – especially Chemistry – for Grades 10 to 13



Abstract

Everything we eat lived once or comes from a living organism – animals or plants – and everything that lives is made up of the same basic biochemical building blocks. These are mainly carbohydrates, fats, proteins and nucleic acids. Hence, it seems to be essential to know more about these bio-molecules, which are, in all their different designs, a part of our nutrition and which belong to our menu. In the PARSEL module “**The building blocks of life – “To become fit and strong eat eggs all day long” – The truth about proteins in my body**” students will have the possibility to experiment with the “building blocks of life” to get to the bottom of important questions such as “How does the chicken protein get into my muscles?” The students will investigate the digestion of protein in the human body: Diluted chicken egg white will be placed into a dialysis tube and an enzyme which decomposes the protein (protease) will be added. The amino acids which will be split off the polymer will be small enough to pass through the pores of the dialysis tube and so reach the outer medium. The amino acids will then be detectable using UV spectroscopy. Afterwards, the experimental setup will be used for and the results will be applied to the processes in the human body.

Subject: Science and/or Chemistry

Grade level: 10th to 13th grade

Curriculum content: Proteins: building blocks, structure and properties; identification reactions; peptide bonds; denaturation of proteins

Kind of activity: Enquiring, explaining, laboratory work, group activities etc.

Anticipated time: 4 lessons of 45 minutes for the example – 24 lessons of 45 minutes in total

Overall objectives/competencies: Structure-property relation, development of a reaction scheme, reversibility of chemical reactions, relation between chemical facts and everyday phenomena, cycles of matter

| Attached files | | |
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| 1. | Student activities | Describes the scenario in more detail and the tasks the students should carry out |
| 2. | Teaching guide | Suggests a teaching approach |
| 3. | Assessment | Gives suggested formative assessment strategies |