

## Statement of participation

# Majid Hassan Mustafa

has completed the free course including any mandatory tests for:

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### Structural materials in cells

This 20-hour free course explored the structural material of cells and the role of proteins in determining cellular growth, shape and strength.

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**Issue date:** 30 May 2023



[www.open.edu/openlearn](https://www.open.edu/openlearn)

This statement does not imply the award of credit points nor the conferment of a University Qualification.  
This statement confirms that this free course and all mandatory tests were passed by the learner.

Please go to the course on OpenLearn for full details:

<https://www.open.edu/openlearn/science-maths-technology/engineering-technology/structural-materials-cells/content-section-0>

COURSE CODE: T356\_3

## Structural materials in cells

<https://www.open.edu/openlearn/science-maths-technology/engineering-technology/structural-materials-cells/content-section-0>

### Course summary

Where does the structure of our body come from? This free course, Structural materials in cells, looks at the structure of cells and how proteins are used by both animals and plants to create a framework for cellular growth. You will also learn how a material as fine as spider silk can exceed the strength of steel.

### Learning outcomes

By completing this course, the learner should be able to:

- describe and give examples of how self-assembly enables construction 'from the bottom up' in natural materials
- explain what is meant by primary and higher-order structure in proteins and give examples
- give examples of the range of functions carried out by proteins within cells
- describe how a combination of strong and weak bonding within biopolymers and lipids is used to build hierarchical structures with common structural elements and finely tuned properties, including calculations where appropriate
- explain how both positive and negative design principles must be applied to the design of molecular devices and comment on the challenges involved in attempting such design.

### Completed study

The learner has completed the following:

#### Section 1

Biological materials

#### Section 2

Construction with lipids

#### Section 3

Providing a framework: structural proteins

#### Section 4

Engineering with proteins

#### Section 5

Conclusion