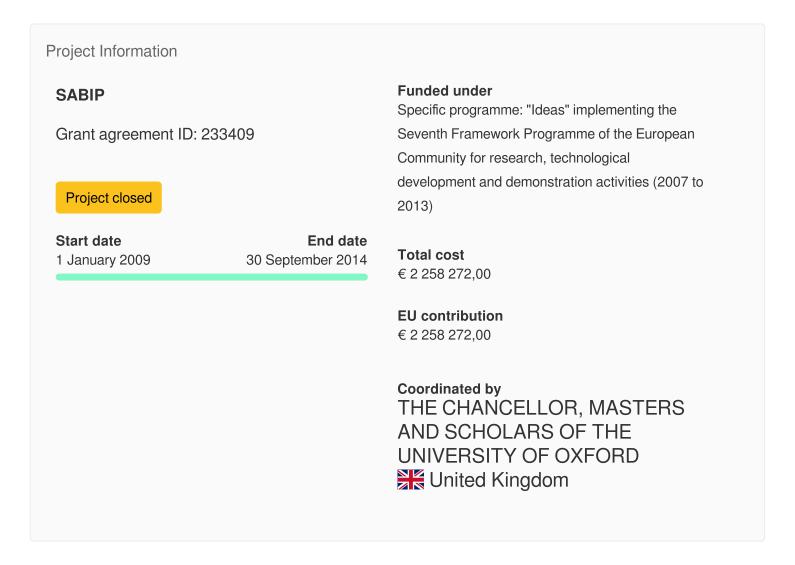


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# Silks as Biomimetic Ideals for Polymers: uropean Research Council SABIP

#### **Fact Sheet**



# **Objective**

Silk offers an attractive combination of strength and toughness coupled with environmentally benign processing and degradation. However, we lack key insights into the interactions between a silk s mechanical behaviour, its chemical composition and its fabrication processes. Hence practically, this ignorance impedes the development of synthetic and recombinant silks. More fundamentally, silks can

provide us with novel insights into other elastomeric natural protein polymers. Hence natural silk technology provides important insights both for the production of industrial bio-polymers and for understanding/copying other biological materials. I propose an extensive bio-mimetic programme to study silk diversity in order to gain new insights into the fundamentals of silk structure-property-functions relationships. WP Biomining will discover and screen silks with interesting material properties and gene-sequences with the proximate goal to discover novel silk types and the ultimate goal to identify silks suitable for commercial production. WP Material Analysis will focus on the acquisition of detailed data on silk material and chemical properties and will be using state-of-the-art measuring techniques. WP Multiscale Modeling is integral to the experimental programme in order to maximise all information obtained and optimise test conditions in order to fully derive and validate structure-property relations using our novel analysis techniques. Finally, WP Applications will disseminate our findings to colleagues in academia and companies throughout Europe. The proposed research will allow us to derive and validate a consistent set of quantitative structure-property relations for silk, which consider the evolutionary history of the different silks and their highly diverse genetic blueprints. This in turn will allow us to predict the mechanical properties of any silk at any stage during its natural and/or biomimetic production process.

## Fields of science (EuroSciVoc) (1)

<u>humanities</u> > <u>history and archaeology</u> > <u>history</u>

natural sciences > biological sciences > biochemistry > biomolecules > proteins

natural sciences > chemical sciences > polymer sciences

natural sciences > computer and information sciences > computational science > multiphysics



#### **Keywords**



<u>silk</u>

#### Programme(s)

<u>FP7-IDEAS-ERC - Specific programme: "Ideas" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)</u>

### Topic(s)

ERC-AG-LS9 - ERC Advanced Grant - Applied life sciences and biotechnology

#### Call for proposal

ERC-2008-AdG See other projects for this call

## **Funding Scheme**

**ERC-AG - ERC Advanced Grant** 

#### **Host institution**



# THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

EU contribution

€ 2 258 272,00

Total cost

No data

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Region

South East (England) > Berkshire, Buckinghamshire and Oxfordshire > Oxfordshire

Activity type

**Higher or Secondary Education Establishments** 

Links

Contact the organisation Website Medicipation in EU R&I programmes Medicipation network

### **Beneficiaries (1)**



# THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

United Kingdom

EU contribution

€ 2 258 272,00

Address

Region

South East (England) > Berkshire, Buckinghamshire and Oxfordshire > Oxfordshire

Activity type

**Higher or Secondary Education Establishments** 

Links

Contact the organisation 

Website 

Participation in EU R&I programmes 

HORIZON collaboration network

Total cost

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