

## Research Project

### Reconstituted Artificial Coronas: engineering nano-particles by in-silico protein mutagenesis

#### Third-party funded project

**Project title** Reconstituted Artificial Coronas: engineering nano-particles by in-silico protein mutagenesis

**Principal Investigator(s)** Schwede, Torsten ;

**Co-Investigator(s)** Creus, Marc ; Haas, Jürgen ;

**Project Members** Kedzierski, Thomas ; Rogaciano Ramalho, Ruben David ;

**Organisation / Research unit**

Departement Biozentrum / Bioinformatics (Schwede)

**Department**

**Project Website** <http://www.ccmx.ch/home/>

**Project start** 01.10.2015

**Probable end** 30.09.2018

**Status** Completed

Nanoparticles (NP) are novel materials being used increasingly in a range of fields, including in medicine. When NP enter the blood stream, they often interact with proteins to form a "corona", which may change the properties and function of the nanoparticle; it is also thought that formation of the corona is related to toxic effects of nanoparticles. However, how proteins bind to NP and how exactly this protein-inorganic interaction occurs remains largely unknown; consequently, any prediction of corona formation and of potential toxicity of NP remains difficult.

In this project, we aim to study the interaction at the biological-inorganic interface, in specific model proteins binding to silica and gold NP of defined size and surface chemistry. Using a reiterative approach combining experiment and computation, hypotheses generated computationally will be tested experimentally using recombinant protein mutants designed to probe potential interaction sites.

**Keywords** Nanoparticles, biological-inorganic interface

**Financed by**

Public Administration

Add publication

Add documents

Specify cooperation partners

ID	Kreditinhaber	Kooperationspartner	Institution	Laufzeit - von	Laufzeit - bis
3721759	Schwede, Torsten	Wick, Peter	EMPA Swiss Federal Laboratories for Materials Science and Technology	01.10.2015	31.12.2018