

Programmable Microenvironments for Artificial Cells

European Center for Living Technology Workshop

at Protolife Srl Labs, Parco Vega, Venice, Italy
13-14 March 2006

Workshop Organizers:

Patrick Wagler and John McCaskill (RUB-BioMIP)

Abstract

The creation of the first artificial cell will be reliant on and implemented by the first 'proto life support' system. We see the microfluidic platform as an essential tool for the control, creation and manipulation of dynamic chemical and biochemical systems such as the protocell. This workshop will bring together a handful of microfluidics experts with those interested in synthesizing novel protocells and artificial cells making use of this technology, both inside and outside the PACE project. The aim will be to make progress on the microfluidic compatibility of chemical systems, in communicating the key opportunities in programmable microfluidic complementation, and to interface this effort with simulation and theoretical studies. We hope this workshop will focus efforts of participants with different complementary expertise towards common goals.

Deliverables

- Progress on the key issue of controlling vesicle growth and division in microfluidic systems
- Synchronizing the different detection platforms of the experimental groups in PACE
- A planning document containing a schedule for experiments involving microfluidic systems in the PACE-project
- A better embedding of the microfluidics activity in relation to other efforts.

Program

(preliminary)

Monday, 13 March

09:00 – 10:00	Hands-on ProtoLife Labs: facilities & demonstration, Sample preparation and experimental setup for visitors
10:00 – 10:45	Idea for the experimental workshop, short presentation of the research proposals, Arrange task forces and experiments planning
10:45 – 11:00	break
11:00 – 12:45	Sample preparation and experimental setup
12:45 – 14:00	Lunch
14:00 – 15:30	Discussion of experiments directions for microfluidic protocell complementation & Relation to PACE objectives (John McCaskill), Short presentations by experimental PIs (Part I) describing their chemical systems and plans for microfluidic tests and integration for the 2-day workshop and future (Martin Hanczyk, Günter v. Kiedrowski, Peter Nielsen, Peter Eggenberger, Patrick Wagler, ...)
15:30 – 16:15	Microfluidic Experiments (in ProtoLife Labs)
16:15 – 16:45	Break, discussion of experiments and systems
16:45 – 17:30	Opportunities to continue/wrap up first day experiments in ProtoLife Labs
17:30 – 18:00	Short evaluation of the first-day experiments, planning for next day
18:00	End of the first day, go to hotel and meet for dinner at 19:30

Tuesday 14. March

09:00 – 10:00	Lab setup and sample preparation
10:00 – 10:45	Short presentations by experimental PIs (Part II), further cooperation planning
10:45 – 11:15	Break and Discussion
11:15 – 12:30	Microfluidic Experiments (in ProtoLife Labs)
12:30 – 13:30	Lunch, individual discussions, final sample preparation
13:30 – 15:30	Microfluidic Experiments (in ProtoLife Labs)
15:30 – 16:00	Final discussion and concluding remarks
16:00	“Official” End of the workshop