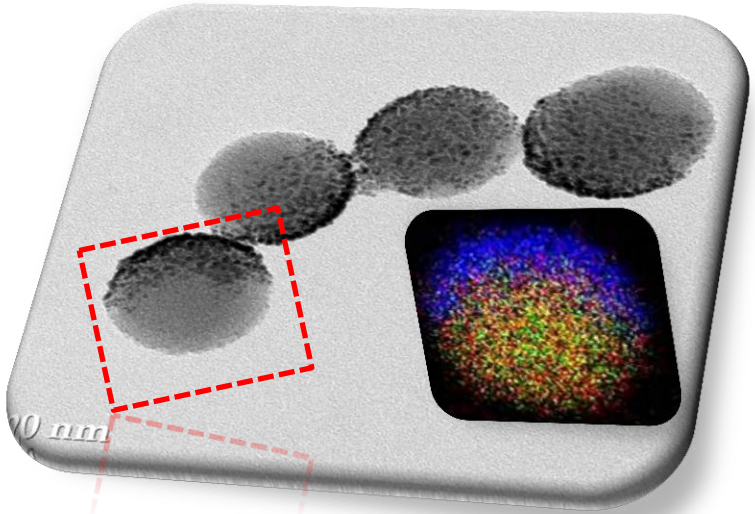
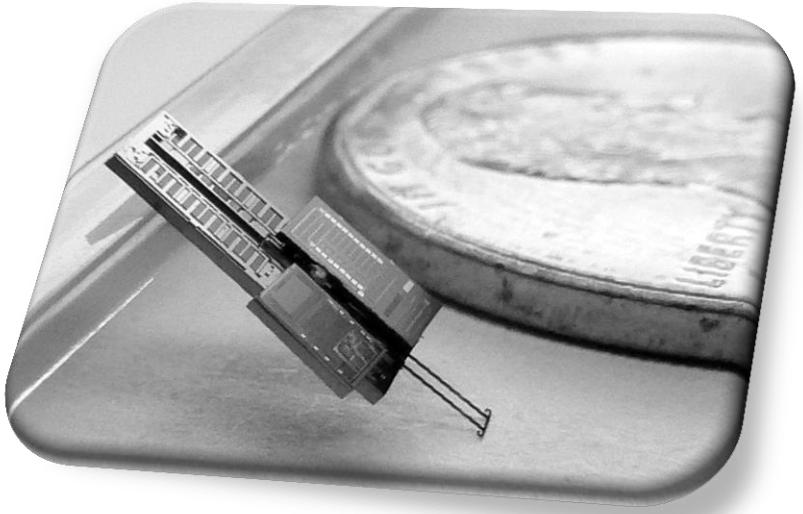
Nano- to Micro-Robotics



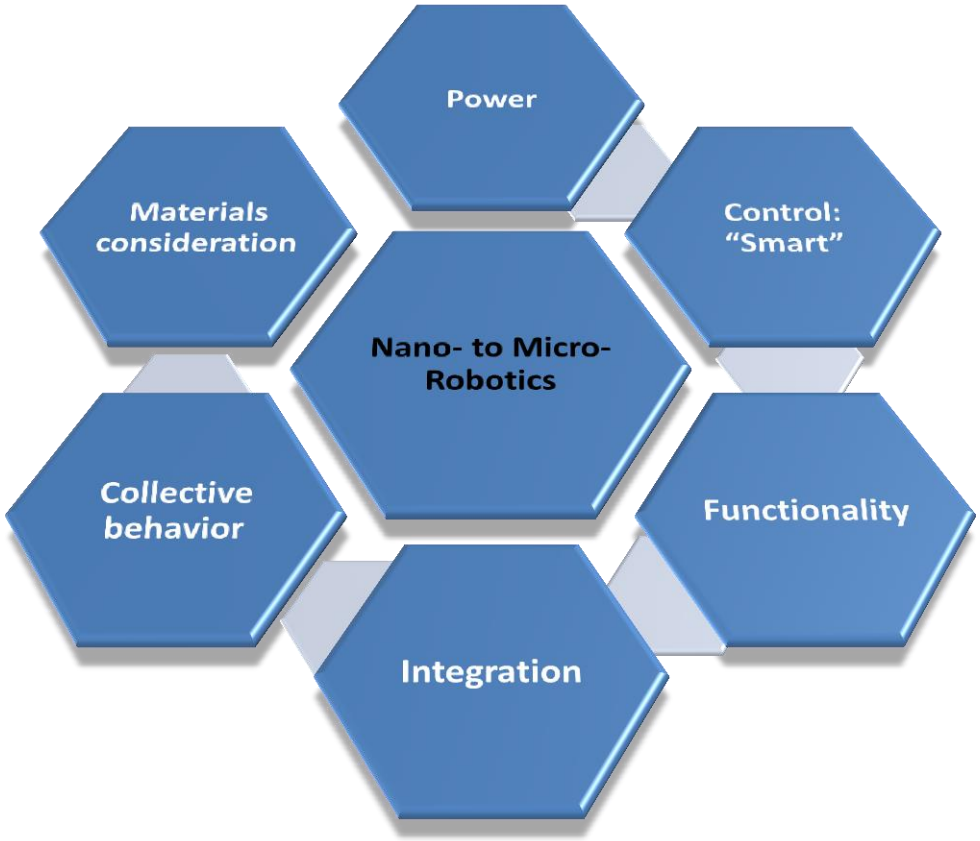


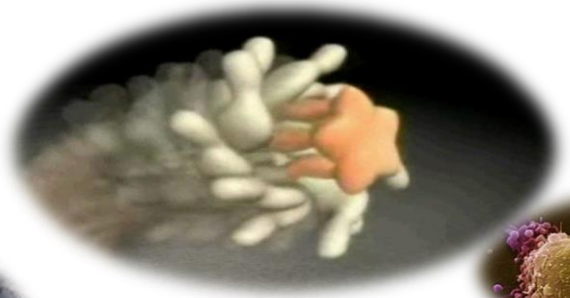
Prof. Samuel Sánchez

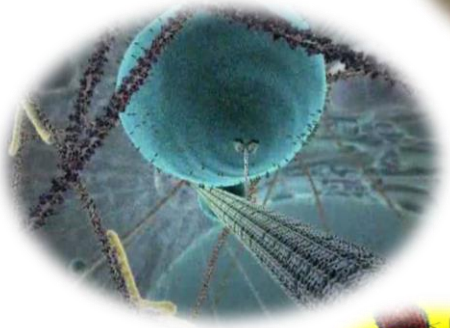
Max Planck Institute for Intelligent Systems,
Stuttgart, Germany
ICREA Professor at Institute for Bioengineering of Catalonia,
Barcelona, Spain.

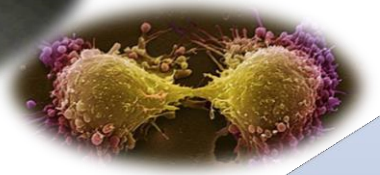
Prof. Sarah Bergbreiter

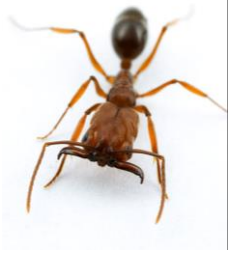
University of Maryland
Mechanical Engineering
Institute for Systems Research
Maryland Robotics Center, USA


Power
Materials consideration
Control: "Smart"
Nano- to Micro-Robotics
Collective behavior
Functionality
Integration









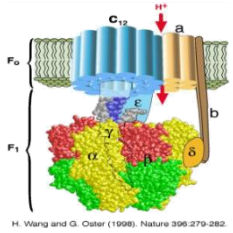
>mm

10 µm

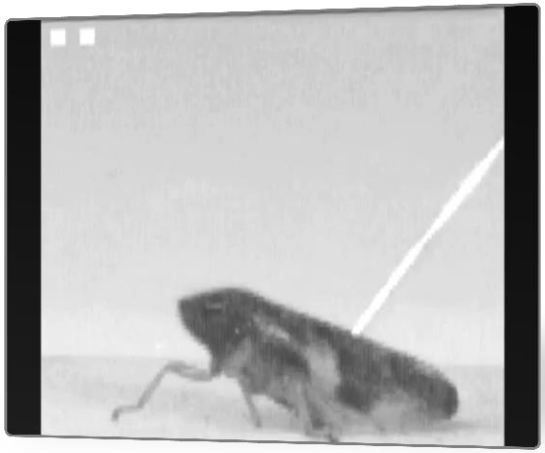
1 µm

100 nm

10 nm



H. Wang and G. Oster (1998). Nature 396:279-282.



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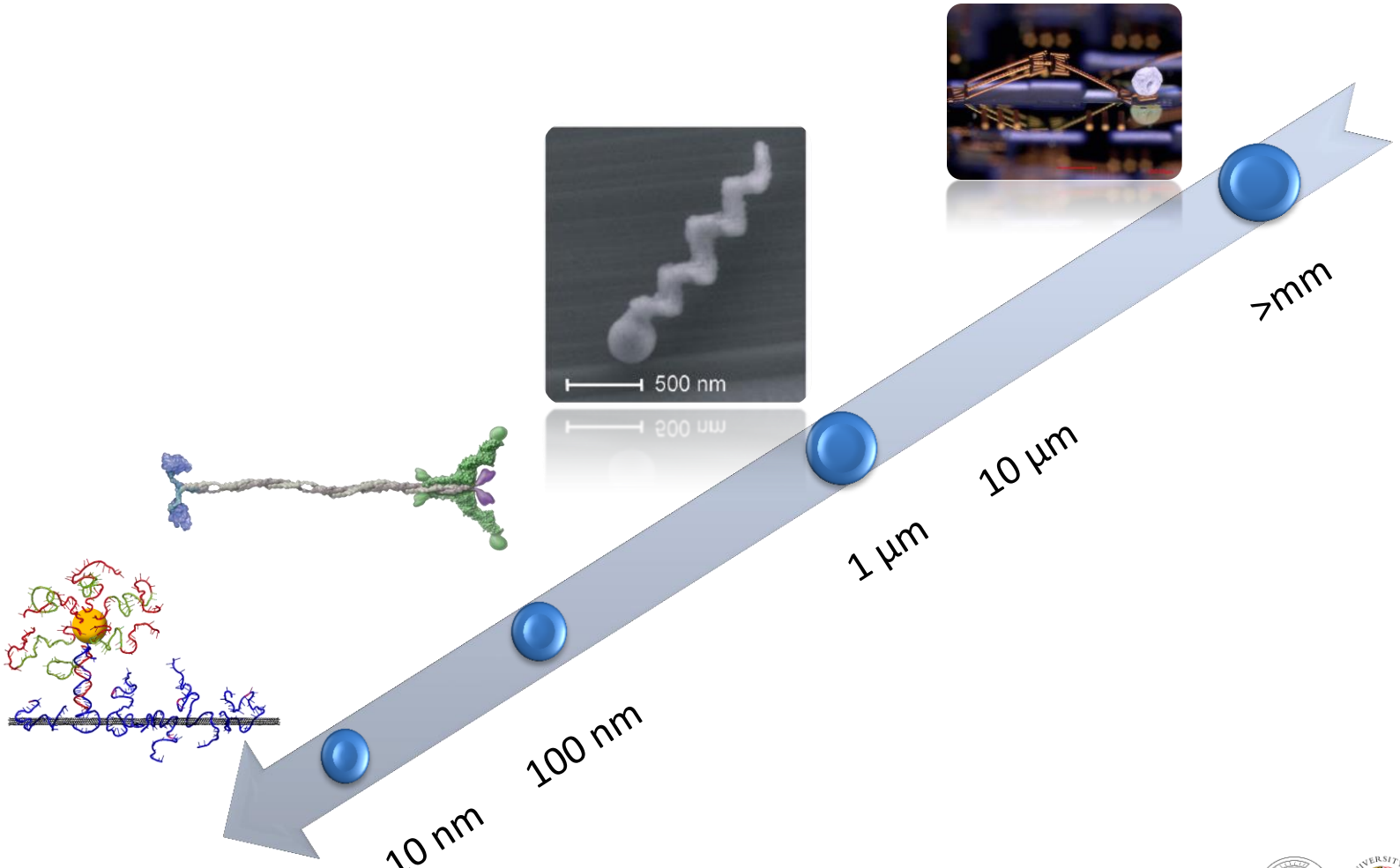
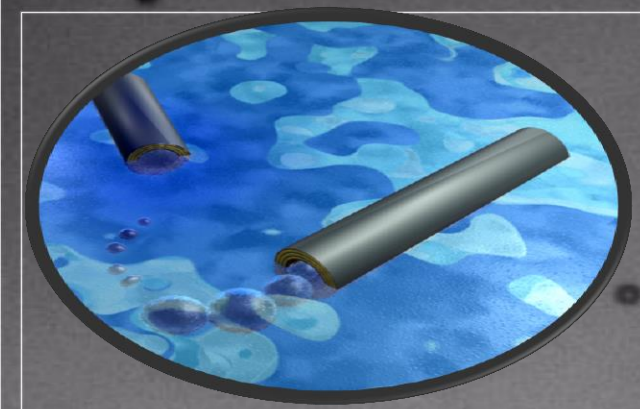

500 nm
>mm
10 µm
1 µm
100 nm
1-10 nm



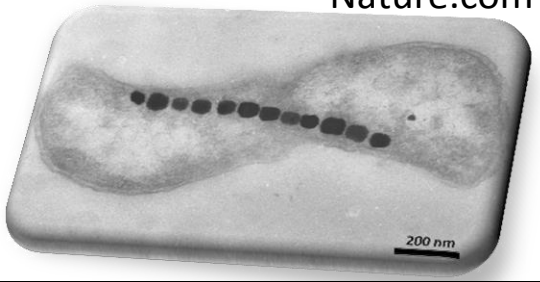
MAX-PLANCK-GESELLSCHAFT

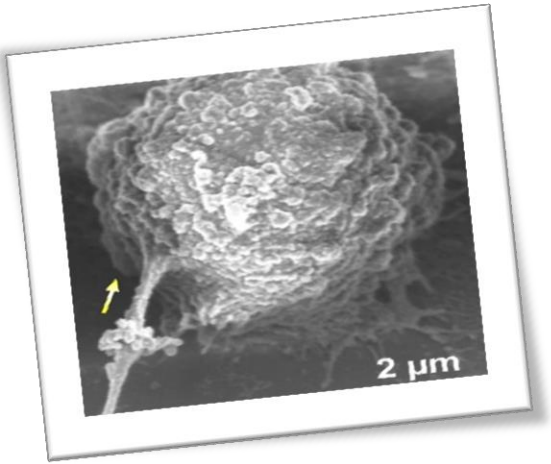
Image from Harazim et al. J. Mat.Chem. 2012
Video Lluís Soler-Turu, MPI-IS 2014

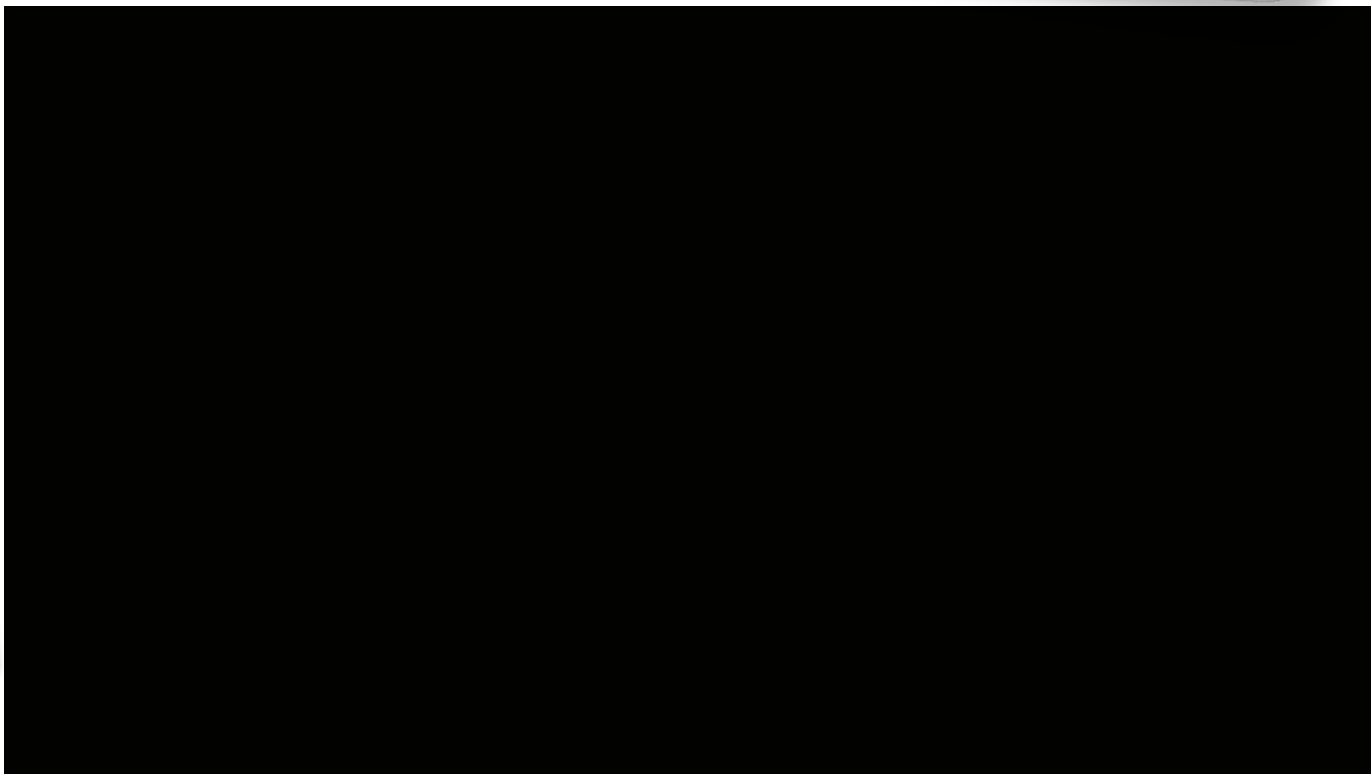
Controllable Tasks of Micro-nano-motors :

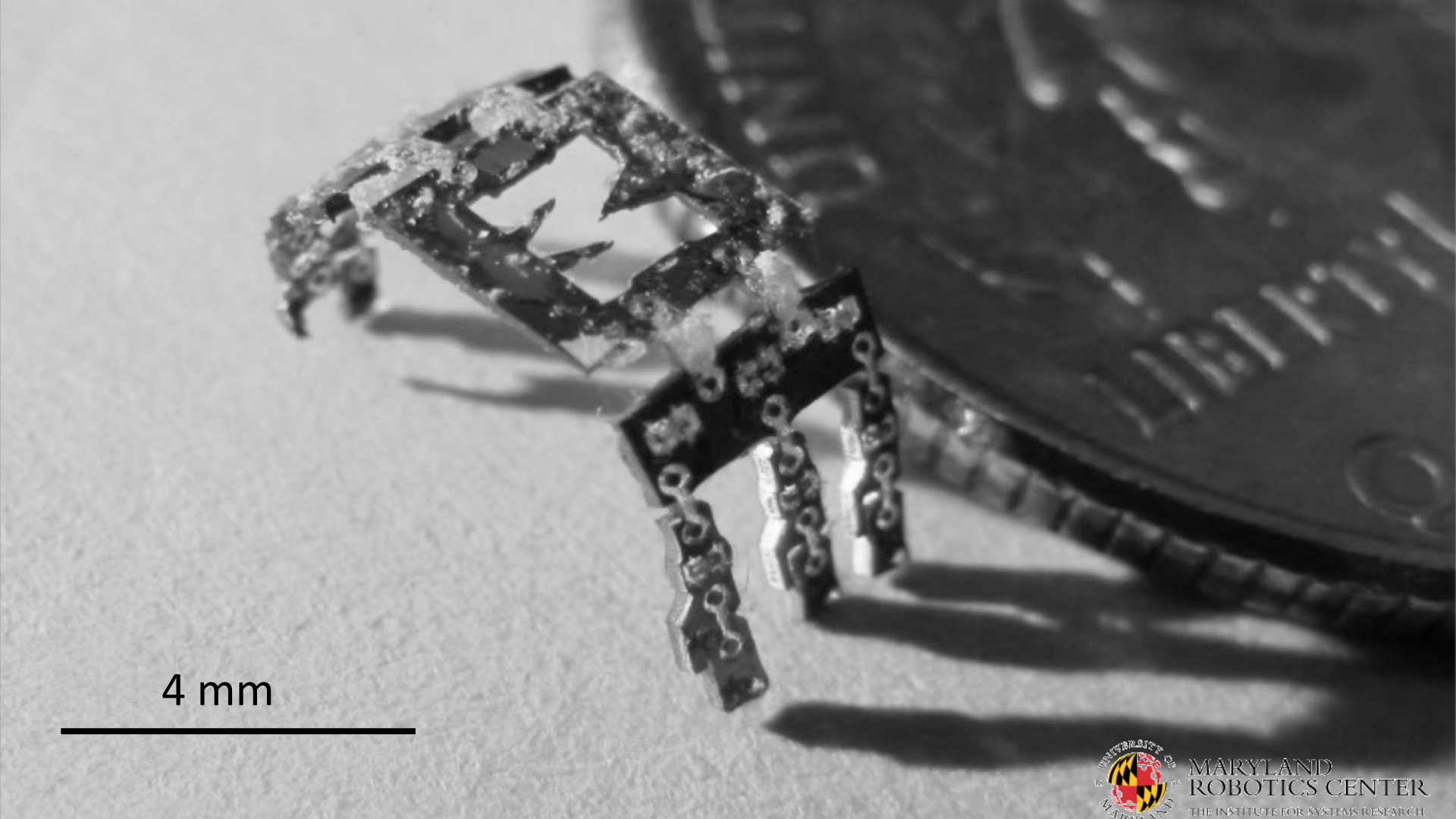
As small as bacteria or cells **5 µm- 50 µm**

Nature.com









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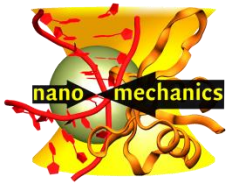
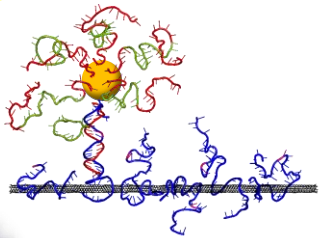
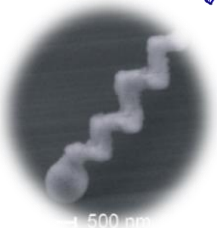
Speakers of Session I: Nano-to-Micro Robotics:



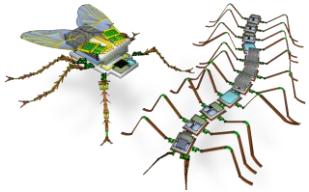
Erik Shäffer, University of Tübingen
Molecular Machines under Tension: Bionanomechanics with Optical Tweezers



Jong Hyun Choi, Purdue University
Designing Synthetic DNA Walkers



Peer Fischer, University of Stuttgart and Max Planck Institute for Intelligent Systems
Nanorobot propulsion in biological fluids



Ronald Polcawich, US Army Research Laboratory
PiezoMEMS-Enabled mm- to cm-Scale Robotics

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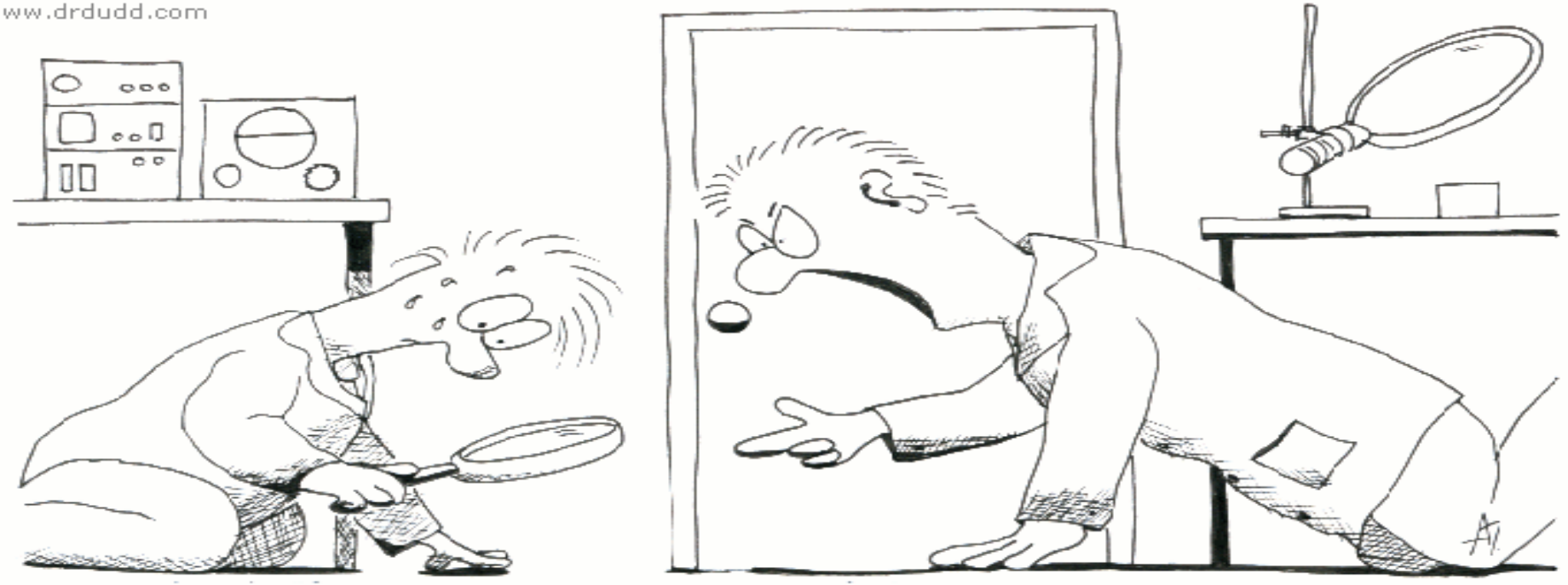

You idiot!!! £5million to develop the world's smallest robot, and 5 seconds for you to lose it.