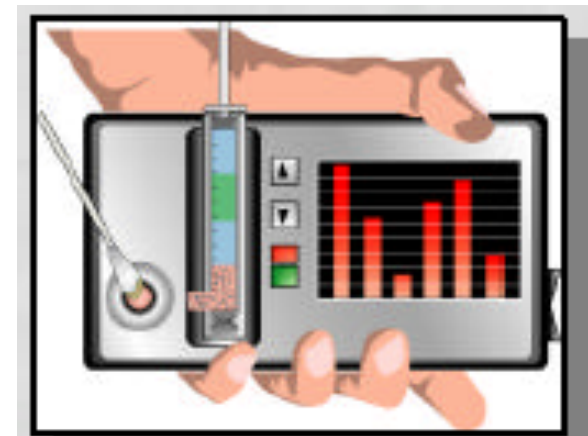
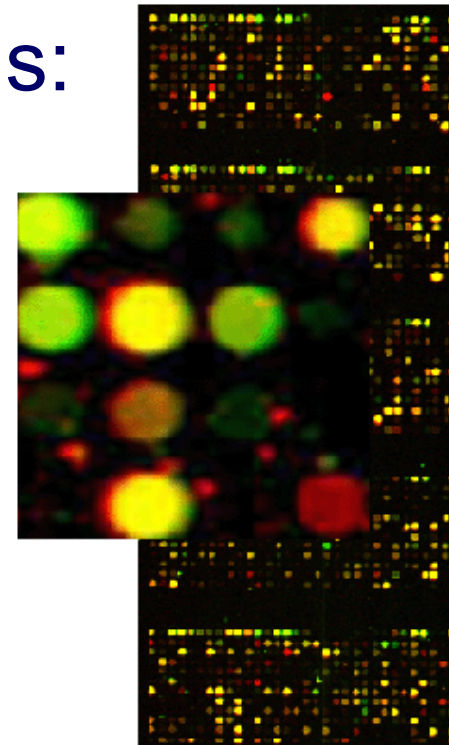


Miniaturized biochemical analysis: Lab-on-a-Chip

The idea is to integrate a whole biochemical laboratory on a miniaturized platform.

Some examples of commercial devices:

- Cardiac point-of-care (Triniton)
- Protein analysis (Gyros)
- DNA sequencing (Caliper)
- Insulin monitoring (i-STAT)





**Today's
technology:**

- **Expensive**
- **Time consuming**
- **Large footprint**
- **Immobile**

**Complementary
techniques
(screening):**

- **Low cost**
- **Rapid analysis**
- **Portable**
- **Simplified sample
taking procedures**



“MICROSYSTEM DOPING TESTS AND EFFECTS OF DOPING ON THE HUMAN BRAIN”

www.medchip.uu.se



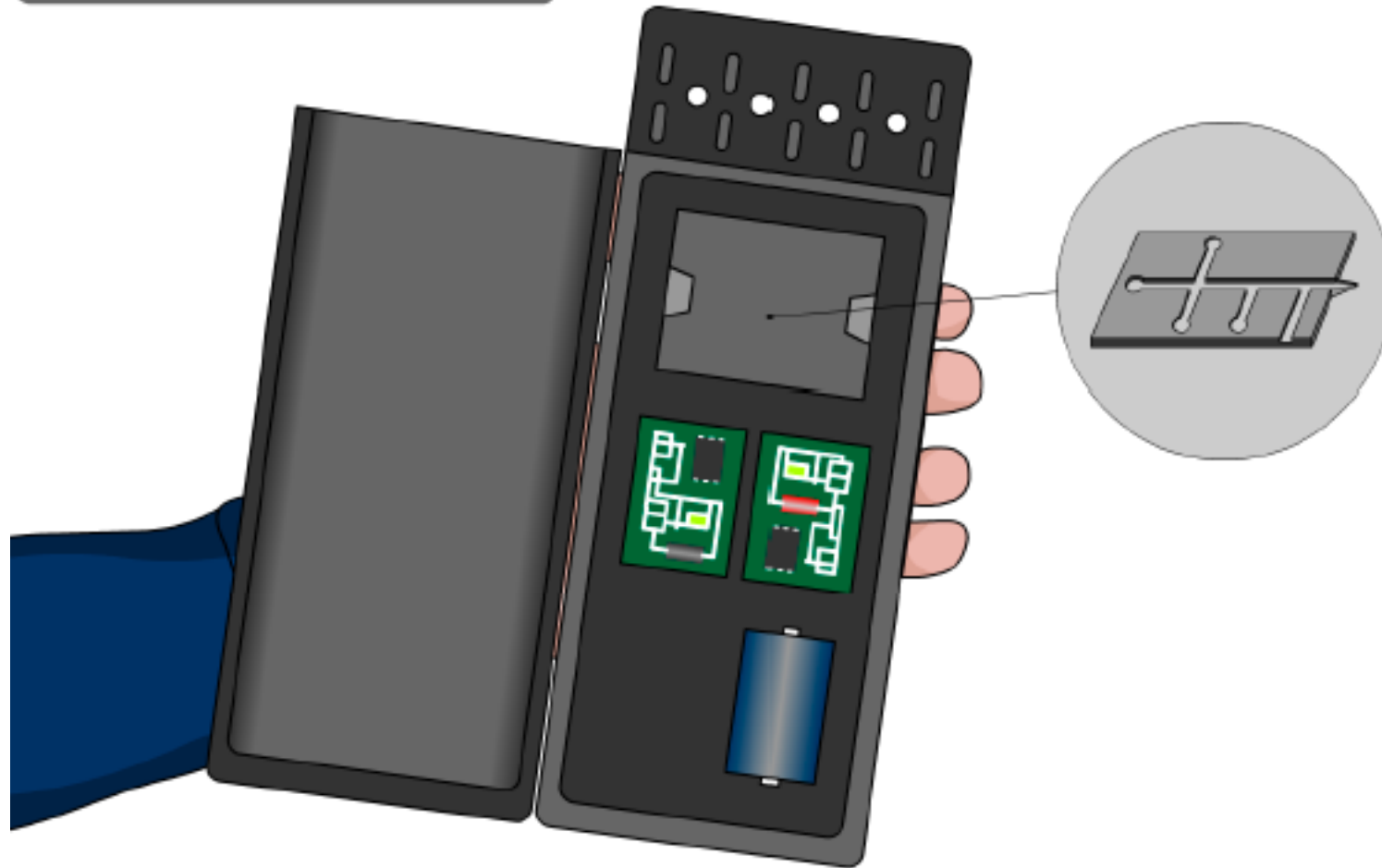
{ Assoc. Prof. Fredrik Nikolajeff, Dept. of Engineering Sciences (coordinator)
Prof. Leif Nyholm, Dept. of Materials Chemistry
Prof. Jonas Bergquist, Dept. of Analytical Chemistry
Prof Fred Nyberg, Dept. of Pharmaceutical Biosciences

The project was financed between 2002-2005

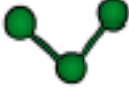
1. HANDHELD DEVICE

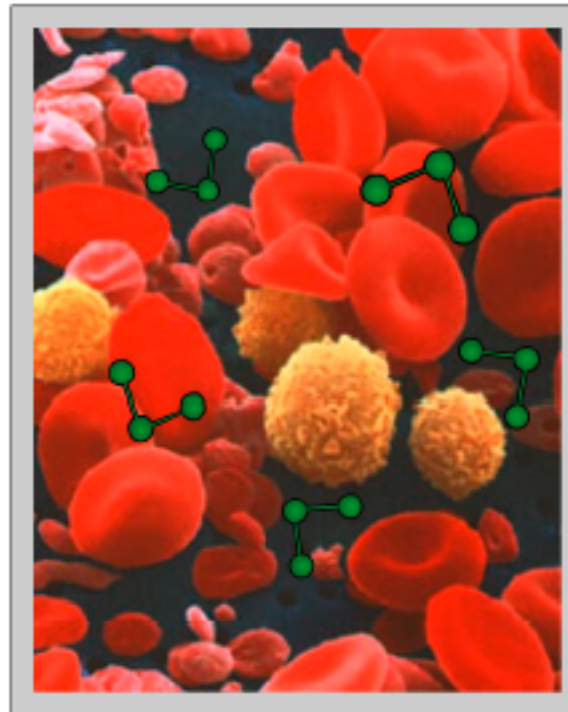


1. HANDHELD DEVICE



4. BLOOD SAMPLE

-  = Erythrocytes
-  = Leukocytes
-  = Steroids
-  = Proteins & Salts



Conclusions from our collaborative research:

- Microfluidic chips successfully developed
- Choice of sample material important (blood, urine, hair,...)
- Difficult to detect AAS substances on-chip using electrochemistry
- Difficult to find relevant biomarkers for long-term use
- Extremely difficult to obtain additional funding (national level, EU, WADA,....)
- No clear Swedish end user (industry, hospital,...)
- Doping problems (in the general sense) is not a prioritized issue on the political agenda

Förslag till insatser från svenskt håll:

- Lyft upp problemet på den politiska dagordningen
- Sverige kan ta en ledande roll vad gäller tidig intervention, t.ex. genom mer resurser till existerande lab (Huddinge) och nya metoder för screening
- Skapa ett nationellt Centrum för Dopingforskning (tvärvetenskaplig karaktär) som kan vara en portal för svenska forskare, politiker, media etc.
- Låt Sverige bli en “testbed” för samlade samhälleliga insatser