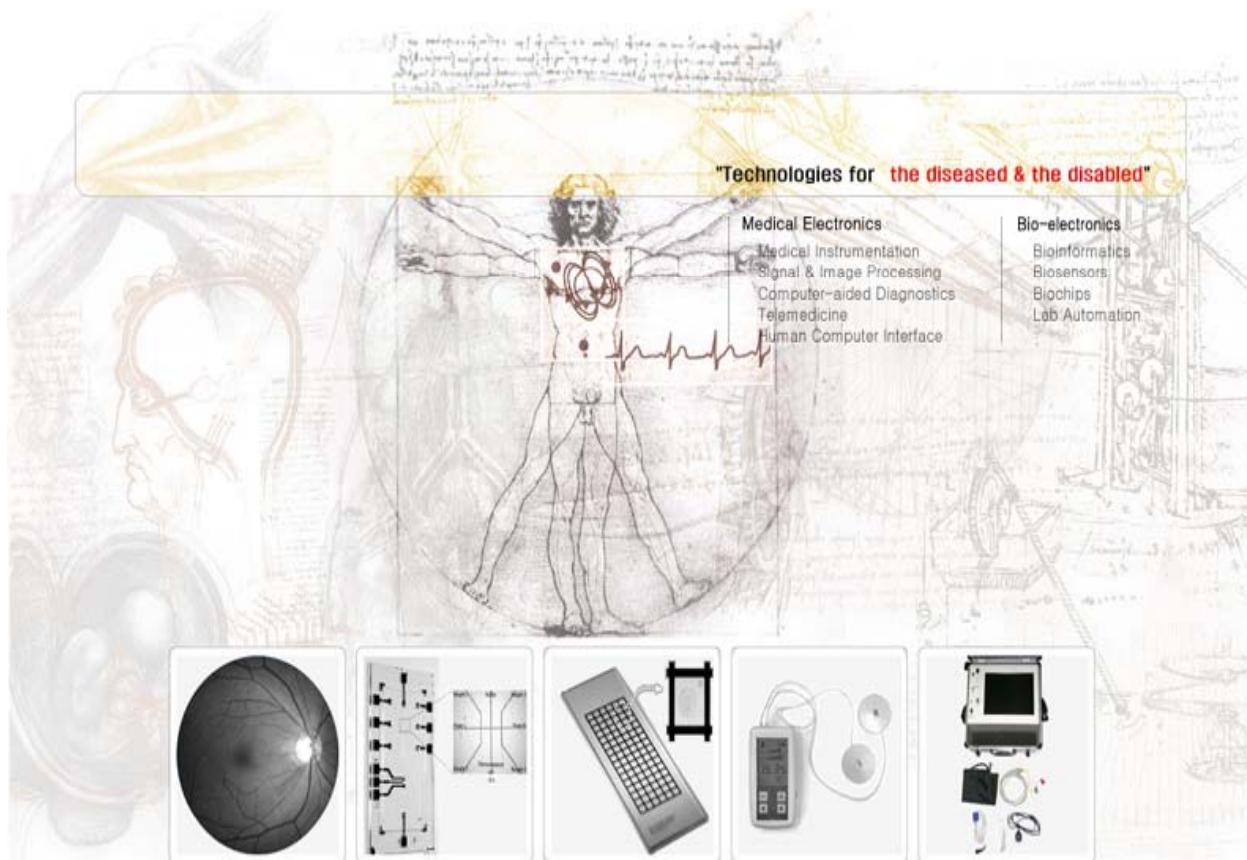
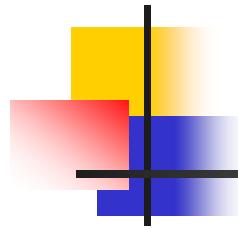


Introduction to Biomedical Engineering

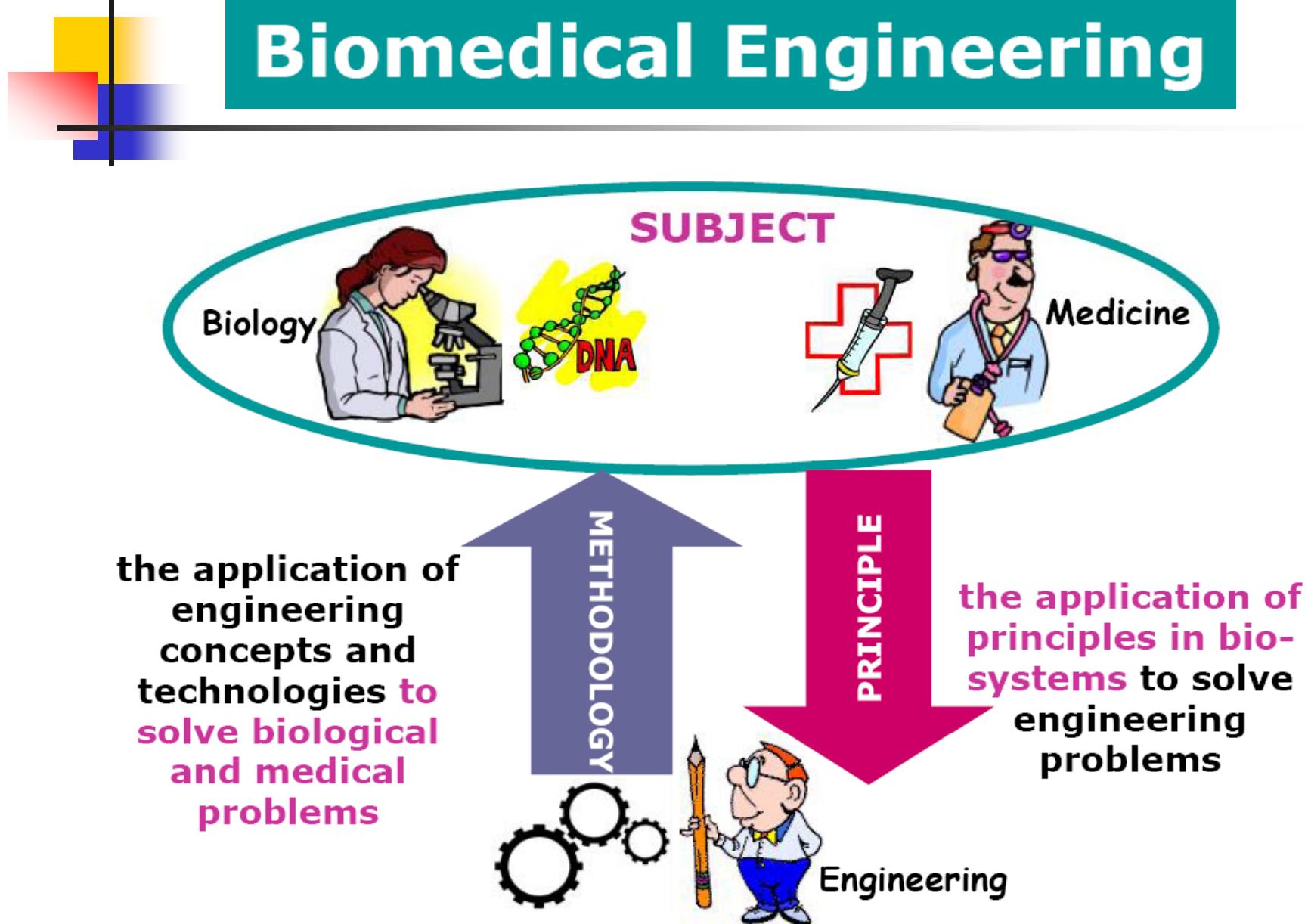




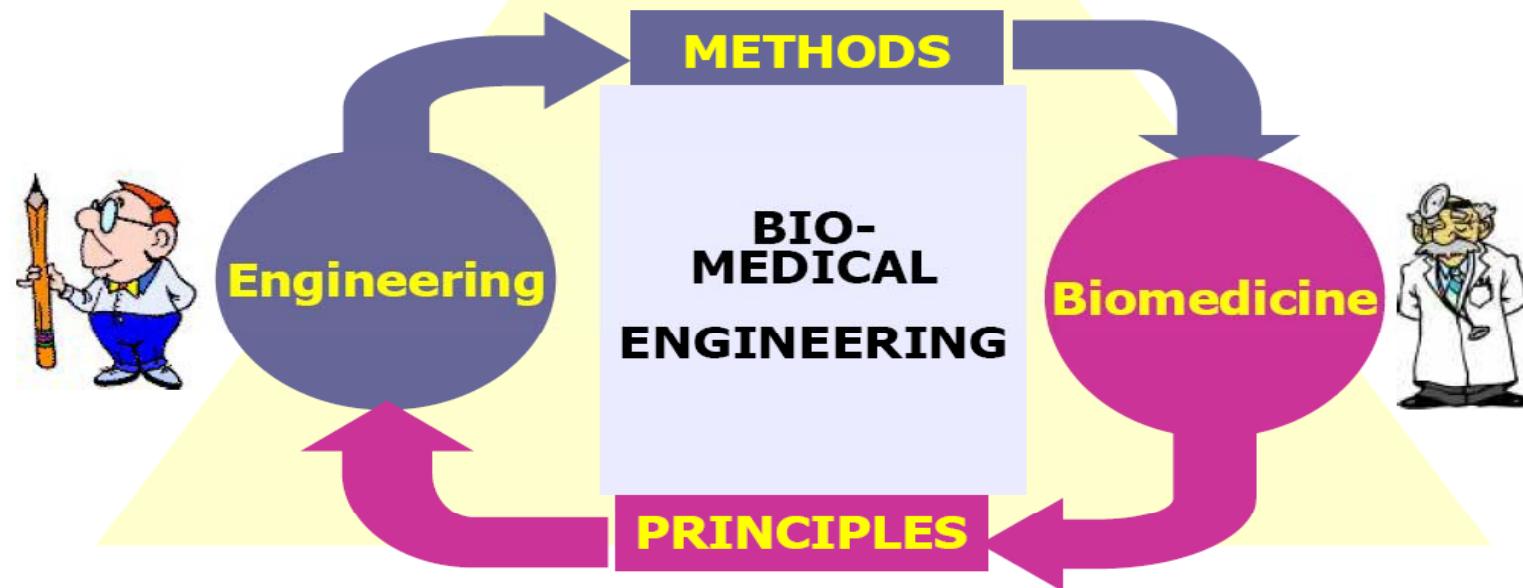
Index

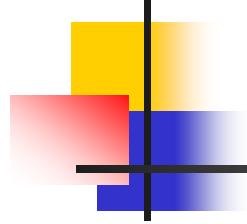
- Definition & Identity
- Applications

Biomedical Engineering



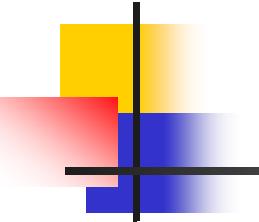
Biomedical Engineering





의공학의 표기

- Biomedical Engineering
- Medical & Biological Engineering
- Medical Engineering
- Bioengineering
- 의 공 학
- 의용생체공학
- 의학공학, 의용공학
- 생체공학



각 학문 분야와 관련 내용

공학분야

전기전자공학

정보공학

~~기계공학~~

화학공학

전산공학

제어공학

통신공학

금속공학

재료공학

섬유공학

원자핵공학

의공학의 세부분야

**medical instrumentation, signal processing,
medical imaging**

medical informatics

**biomechanics, hemodynamics, artificial organs,
rehabilitation engineering**

biochemistry, cell engineering, clinical laboratory

**computer application in medicine, artificial
intelligence, information system (big data)**

biofeedback, biological simulation

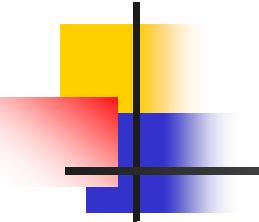
medical networks, telemedicine

biomaterial(hard tissue)

biomaterial(soft tissue)

biopolymer

nuclear medicine, magnetic resonance technique



Bridge over 'Troubled Water'...

Biomedical
Engineering



Engineering



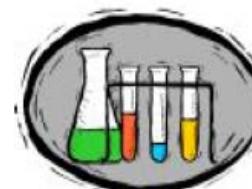
mathematics



physics

DEDUCTION

Biological & Medical
Science



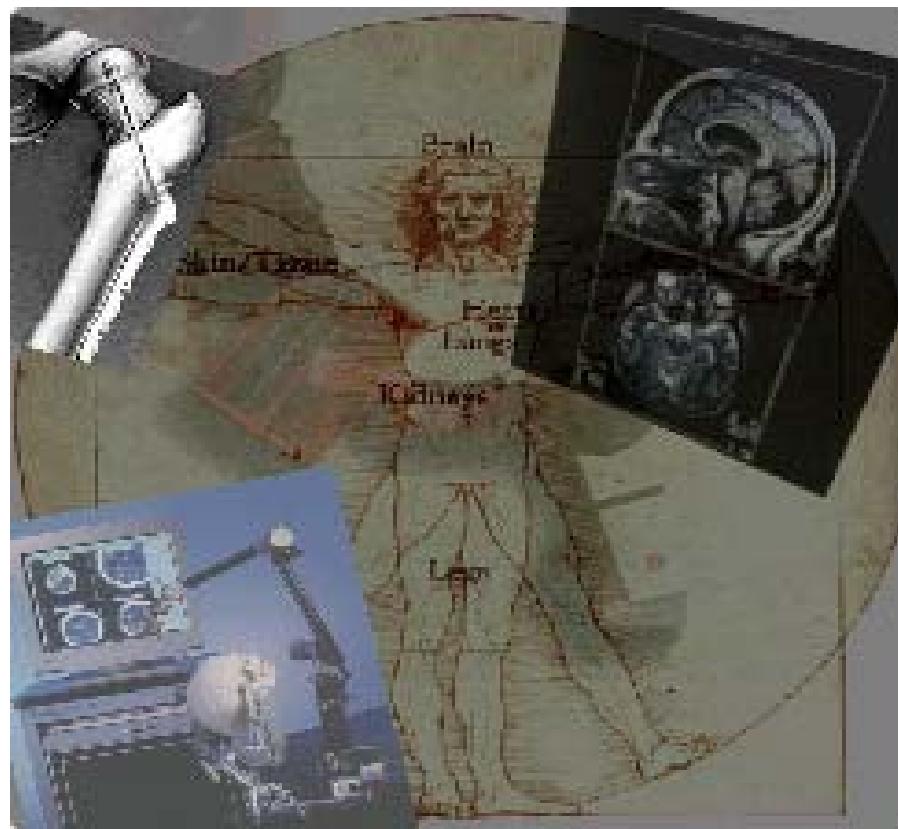
chemistry



biology

INDUCTION

▪ Applications

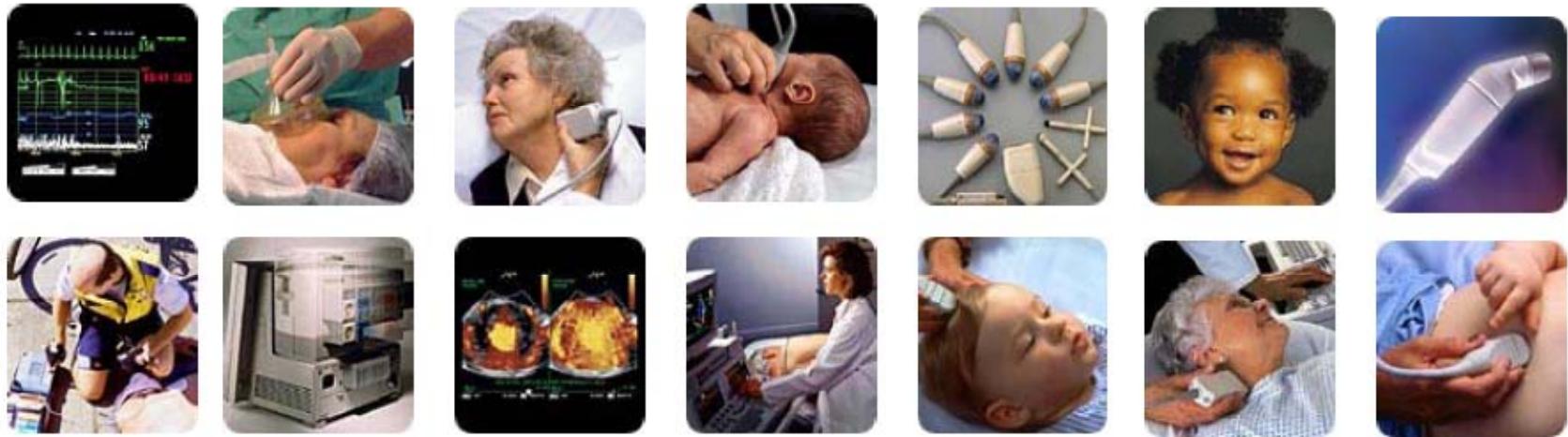




**"Science studies what is;
Engineering creates what
never was."**

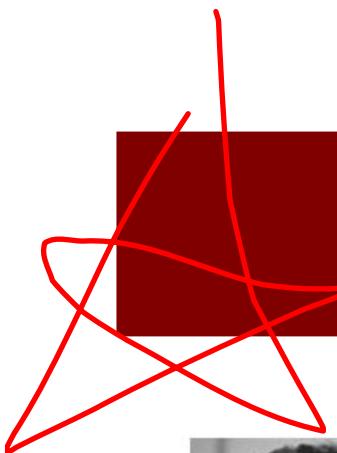
- Theodore van Karman -

BME in the Medical Arena



Helping you make a difference





Cormack and Hounsfield



Sir Godfrey N. Hounsfield, UK
Central Research Laboratories,
EMI, London, UK
1919 -



Allan M. Cormack
USA
Tufts University
Medford, MA, USA
1924 - 1998



The Nobel Prize in Physiology or Medicine 1979
"for the development of computer assisted tomography"

The 2003 Nobel Prize in Physiology or Medicine

6 October 2003

The Nobel Assembly at Karolinska Institutet has today decided to award The Nobel Prize in Physiology or Medicine for 2003 jointly to

Paul C Lauterbur and Peter Mansfield

for their discoveries concerning "**magnetic resonance imaging**"



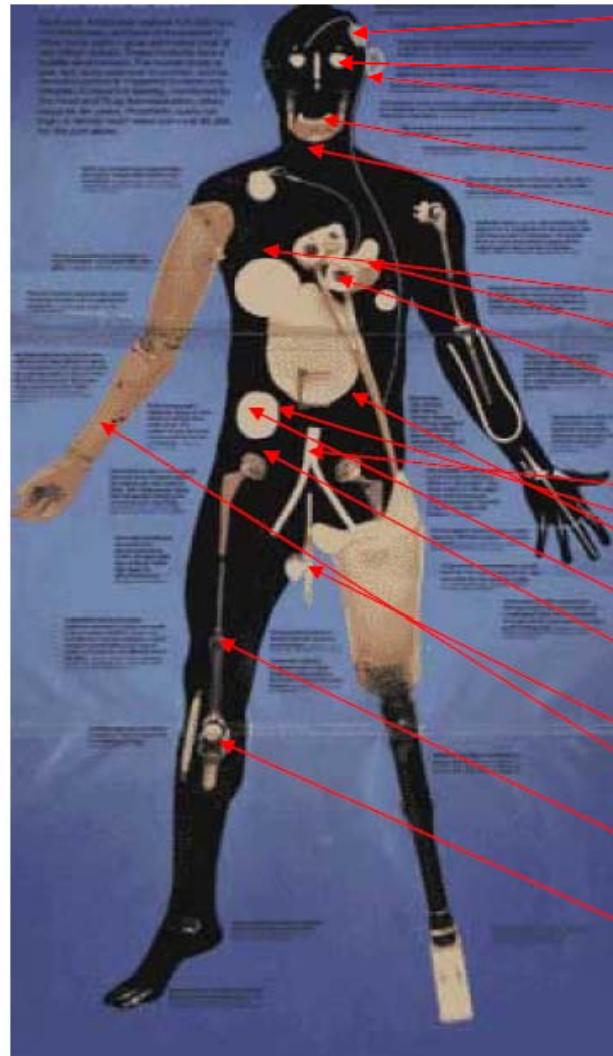
Paul C. Lauterbur
Professor of
Chemistry,
Univ. of Illinois



Sir Peter Mansfield,
Professor of Physics,
Univ. of Nottingham



Artificial Internal Organs



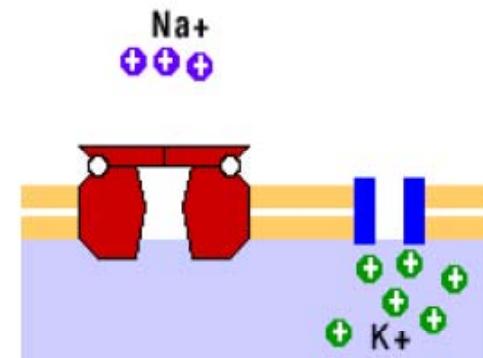
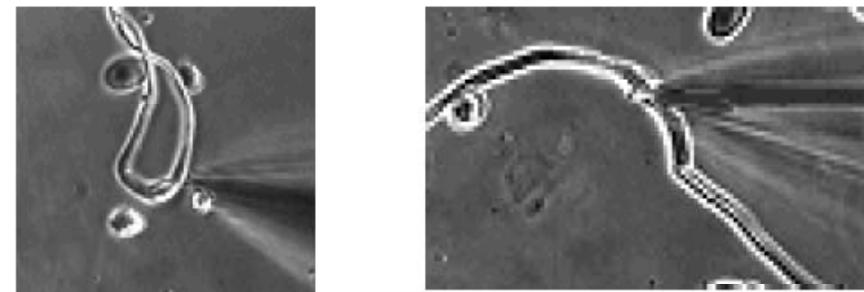
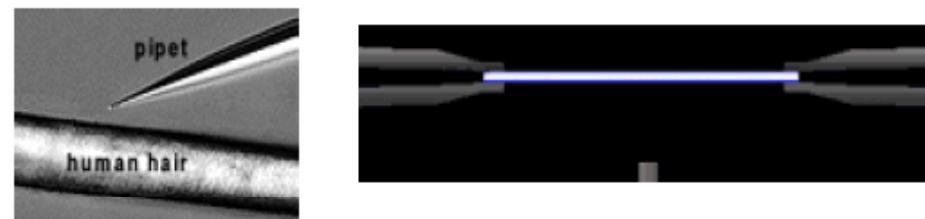
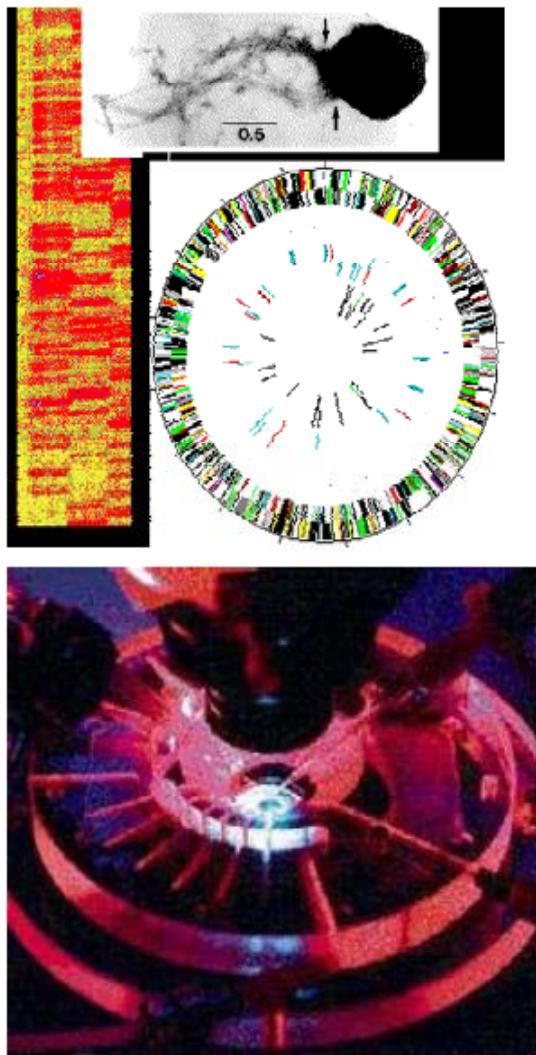
- Artificial brain
- Artificial eye
- Artificial ear
- Artificial tooth
- Artificial larynx
- Artificial breast
- Artificial heart
- Artificial heart valve
- Artificial blood vessel
- Artificial liver
- Artificial pancreas
- Artificial kidney
- Artificial bladder
- Artificial penis
- Artificial arm
- Artificial leg
- Artificial joints

"I am looking forward to returning to a normal life"

**Robert Tools, world's first recipient of the
AbioCor Implantable Replacement Heart. (July, 2001)**



BME in the Biological Arena

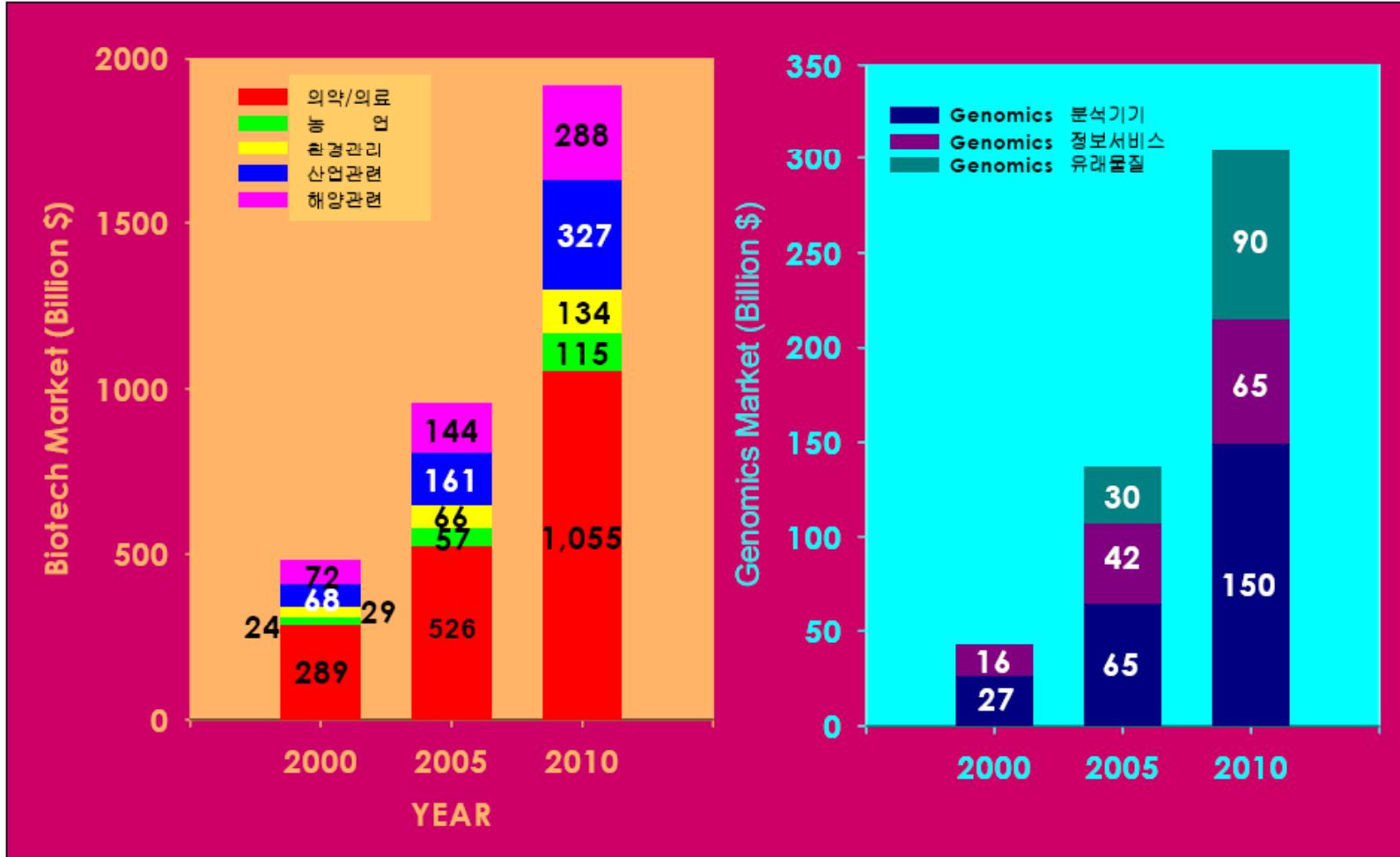


Genomics & Instrumentation

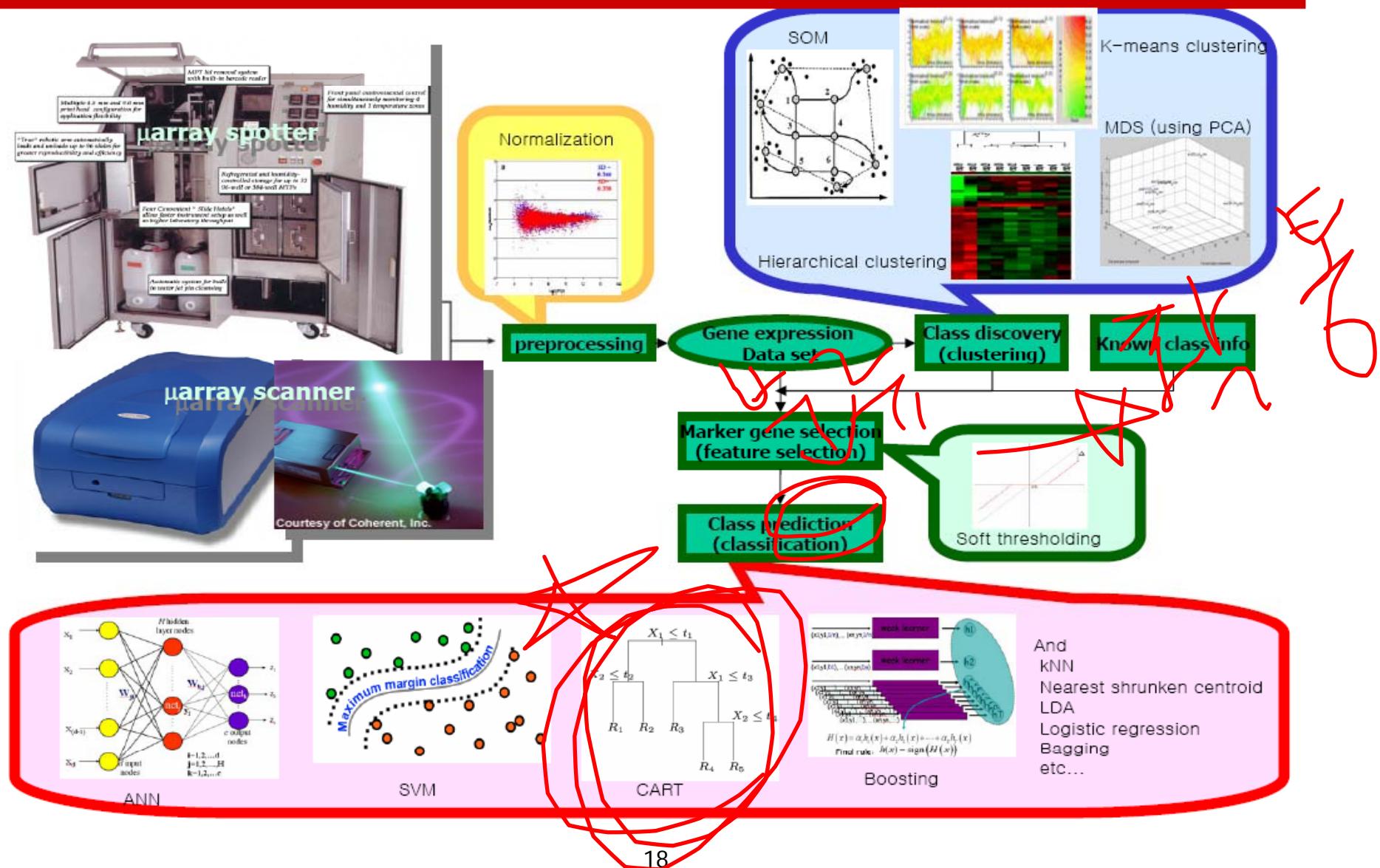


The automated production line for sample preparation at the Whitehead Institute, Center for Genome Research. The system consists of custom-designed factory-style conveyor belt robots that perform all functions from purifying DNA from bacterial cultures through setting up and purifying sequencing reactions.

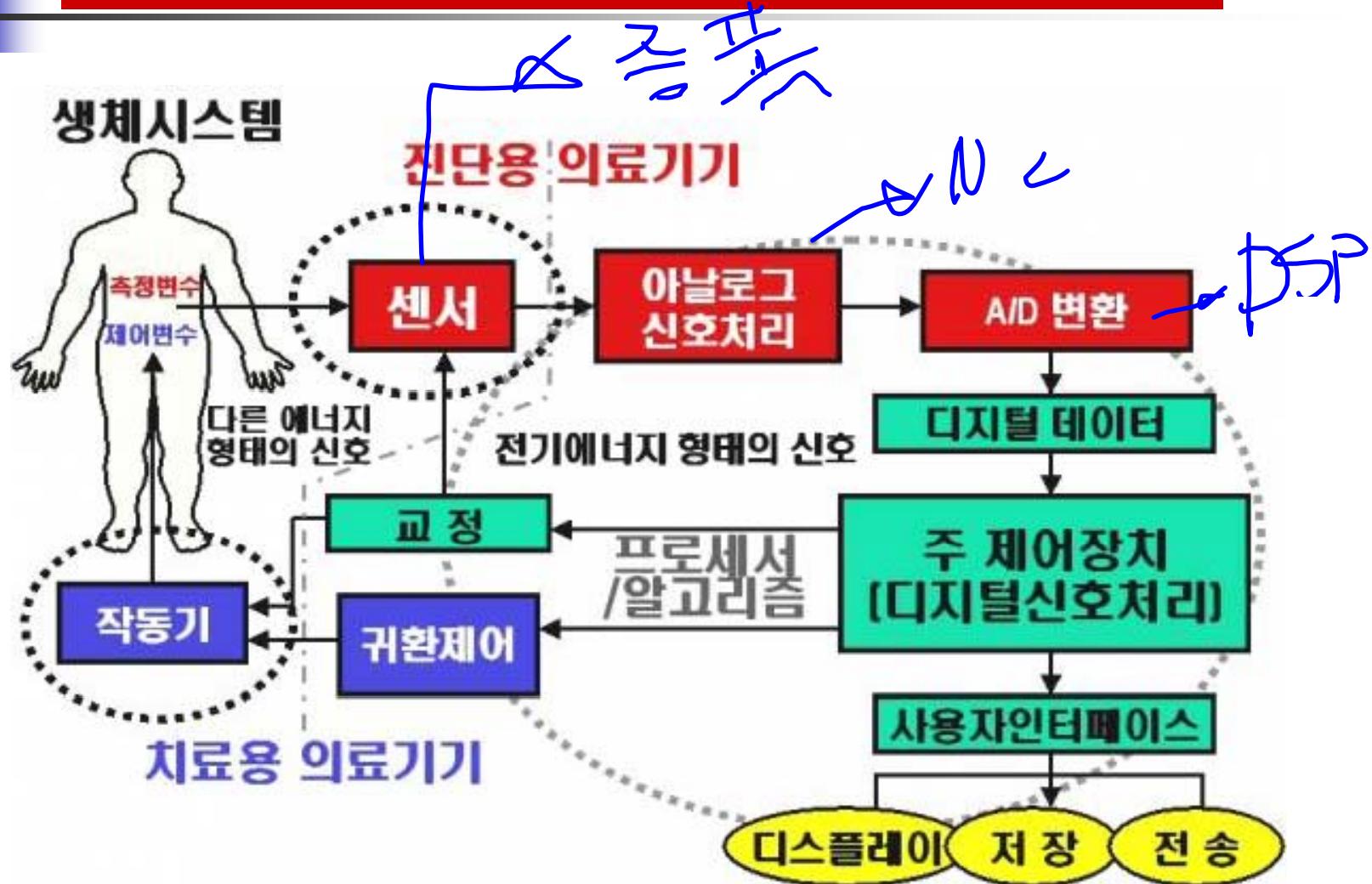
Genomics & Instruments



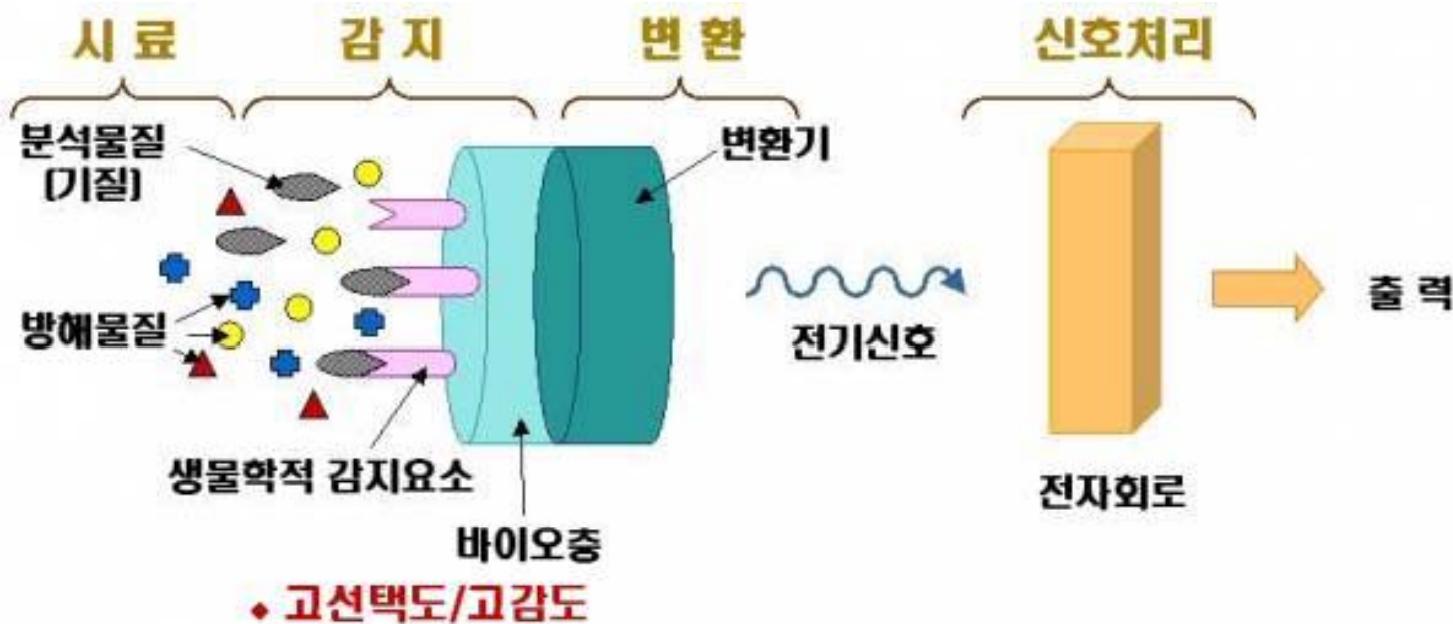
Bioinformatics & Instruments



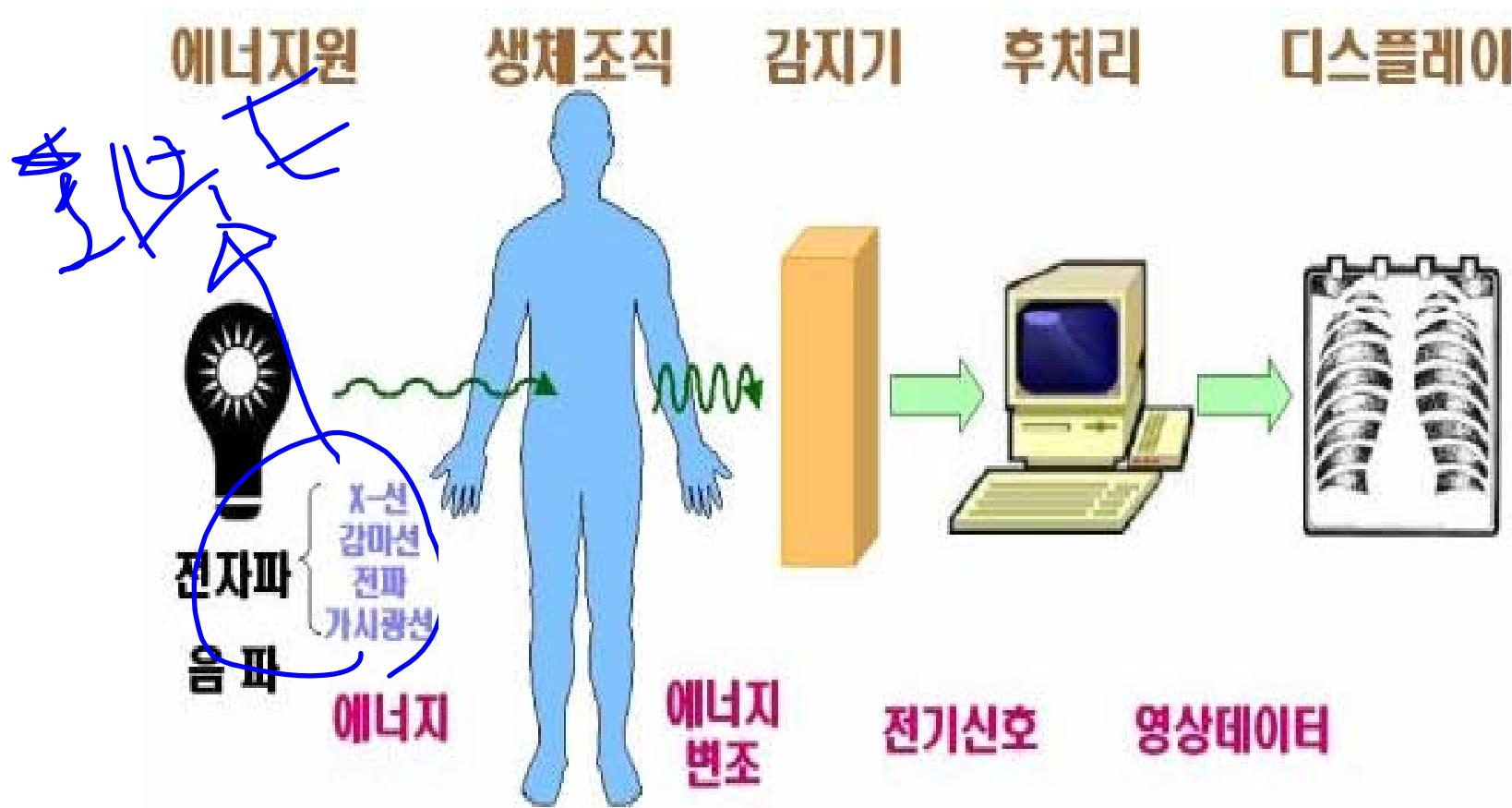
Bioinformatics & Instruments



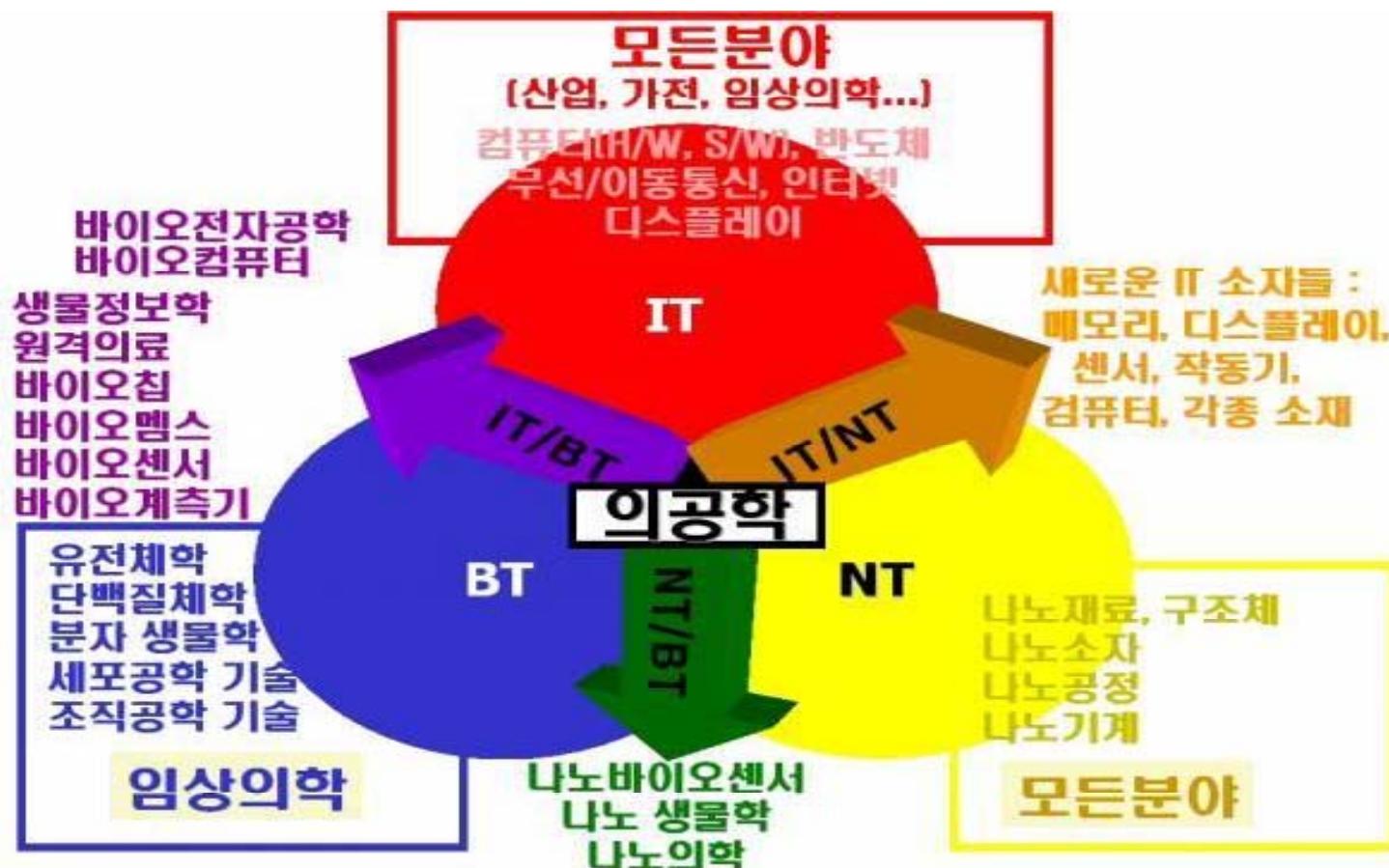
Bio Sensor



Medical Imaging



Biomedical Engineering and IT/BT/NT Fusion Technology



예) 나노바이오 기술

- 나노바이오 센서
- 나노바이오 로봇

