

Revolution in Medicine and Development of Technology

Perspective, Issues and resolutions

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Ex.1 Genetic Technology:

Diagnosis & Treatment

- Issues in clinical practice :

Ethical, legal and psychosocial implications, etc.



Genetic information



Informed consent in genetic testing

Ex.2 Genome medicine: includes

“elucidation of molecular pathogenesis”,
“genetic diagnosis”, and “innovative
therapy (personalized medicine etc.)”

- Issues : Ethical and legal



“ Safety assurance”

Ex.3 Appropriate drug to appropriate person: realized by

Our knowledge of human genome information
and recent advance of its analysis.



Evidence Based Medicine

Ex.4 Current topics of tissue engineering:

Its basic strategy is how to use extra cellular matrixes, stem cells, and growth factors

Ex.5 Future perspectives of regenerative medicine:

Issues (ex): Autonomous cell (.easy) or
Non - autonomous cell



Immunodeficiency

Ex.6 Telemedicine: Economical issue etc., but ,

- Robotic surgery
- Tele-pathology
- Tele-cytology
- Tele-radiology
- Applied to home health care



Ex.7 Complementary & alternative therapies: changes medicine

- ART. Assisted reproductive therapy
- Artificial intelligence
- Artificial organ

PRESENT

FUTURE (2005)

Transplantation
Medical Care



Artificial Organ



Cell Therapy

*Heart
Transplantation*



*Temporary
Artificial Heart*



*Regeneration
of Self Heart*

*Kidney
Transplantation*



*Dialysis,
Artificial Kidney*



Self-Kidney

*Liver
Transplantation*



Self-Liver

Pancreas



*Replenishment
Therapy*



Self-Pancreas



2001年(平成13年)7月7日(土曜日)

合併症のリスクを軽減した人工肺



**耐久性1ヵ月
人工肺を開発**

大日本インキ・東洋紡など

血液凝

人工肺のイメージ
酸素も多く含む血液



酸素
二酸化炭素
ガス交換
人工肺
二酸化炭素も多く含む血液

大日本インキなどの人工肺、東洋紡は、酸素と二酸化炭素の交換を担うための膜を人工的に作り出す技術を開発し、数日経たず血液が凝固する人工肺の耐久性を大幅に向上させた。人工肺は急性心不全などの治療や手術の際、出血が止まらない患者に使用される。人工肺内面に血液を凝固させ、血液中の二酸化炭素を除去し、酸素を供給する仕組みだ。

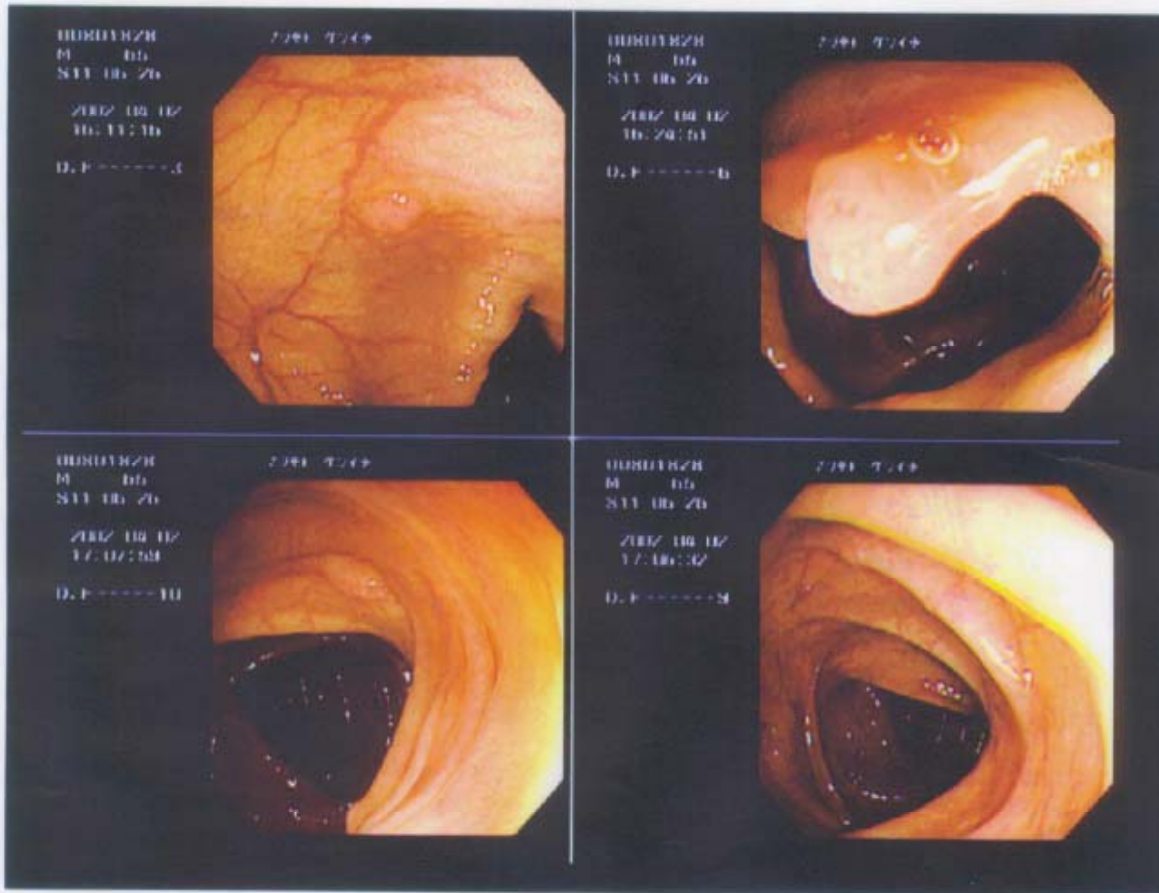
大日本インキなどが開発した人工肺は、内臓の形成

- Artificial Lung -
Developed by
Japan Ink Co., Ltd. &
Toyo Textile Co., Ltd.

Ex.8 Others:

Rapid progress of existing medical device

- CT,MR etc.ultrasonic, imaging diagnostic systems (including Nuclear medicine)
- Endoscopic diagnostic and treatment
- Artificial dialysis
- Drastic progress of treatment materials
 - Single use vs. re-usable (⇒ infection control)
- Electronic medical record systems
- Other



2002/4/2

COLEMAN

Colon, Polyp

My conclusion

in “Bio.Genome” century

- 1) The appreciation of the importance of “Safety Assurance”! → “Risk management”
- 2) “Drastic measures” for the rapid progress of medical technology. in legal, ethical, and economical!
→ “Technology assessment”
- 3) More rapid and more efficient “Global Harmonization” between different industry for new and emerging technology.
(ex.) Medical device, (Invitro), Pharmaceutical, etc.