米国における“バイオメディカル リサーチ”および研究助成の機構

-アイディアが先かお金が先か-

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米国における“バイオメディカル リサーチ”
および研究助成の機構
-アイディアが先かお金が先か-

I. バイオメディカル　リサーチの目的、
使命と位置づけ

II. 研究組織と体制

III. 研究助成と資源

IV. 女性研究者の現状

V. 日本における研究体制および研究助成との比較
-何が必要か-

米国人の考え方

1. 個人を基礎とし、個人の権利を尊重する。

2. 横の連携を重視し活用する。

3. “Fairness”を重視する。

4. 激しい競争を是認する。

5. 前向きに、positive に考える。

I. バイオメディカル　リサーチの目的、使命と位置づけ

1. Health Science Center の使命

2. “Biomedical Research”の定義と目的

Health Science Center Mission Statement

Aim and Mission

To improve human health through:

-Education

-Research

-Clinical Care

-Public Service

What is Biomedical Research?

Bomedical Research is:

The broad area of science that looks for ways to prevent and treat diseases that cause illness and death in people and animals

II. 研究組織と体制

1. Health Science Centerの構成
   - College と Department
   - Institute, Center for Excellence
   - Administration, Support Facility

2. Faculty の構成

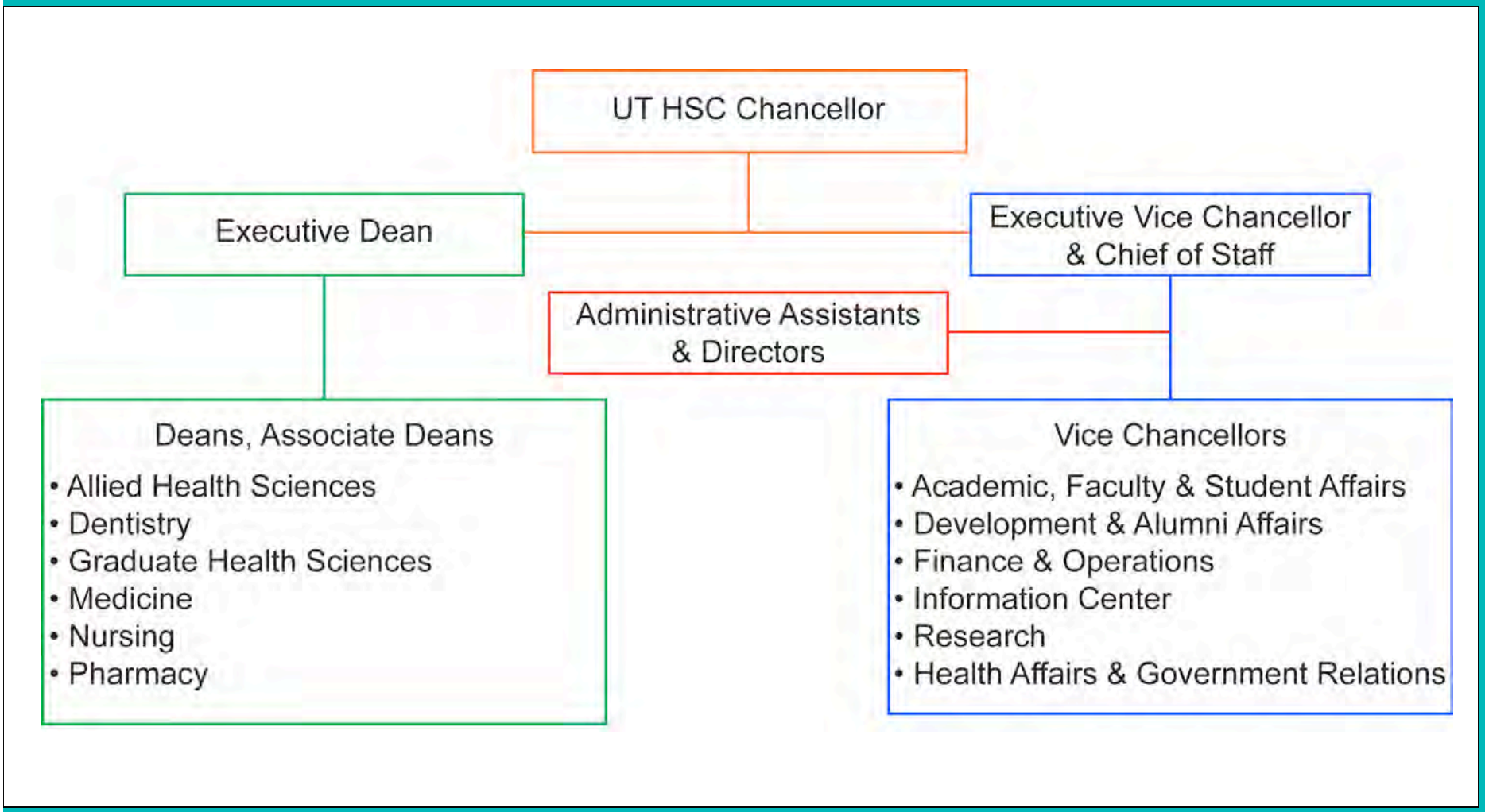
3. 個人研究・グループ研究と共同研究
   - Coreの必要性 -

THE UNIVERSITY of TENNESSEE

HEALTH SCIENCE CENTER

College of Graduate Health Sciences

Overall Structure of University of Tennessee Health Science Center



Departments

- Chairman
- Full Professors
- Associate Professors
- Assistant Professors
- Instructors, Research Associates
- Postdoctral Researchers/Fellows
- Predoctral Students

Faculty

- Tenure, Tenure-track
- Non-tenure
- Clinical Professors
- Research Professors

Research Programs and Institutes

- Center for Cancer Research
- Center for Integrative and Translational Genomics
- Clinical and Translational Science Institute
- General Clinical Research Center
- Hamilton Eye Institute
- Proteome and Transcription Database
- Tennessee Mouse Genome Consortium
- UTHSC Mid-South Center for Biodefense and Security

Center Of Excellence

- Center for Pediatric Pharmakokinetics & Therapeutics
- Center of Excellence for Neuroscience
- Connective Tissues Diseases, Center of Excellence
- Molecular Resource Center of Excellence
- Rheumatic Disease Research Core Center

Research Resources

Core Laboratories

-General Clinical Research Center

-Laboratory Animal Care Unit

-Flow Cytometry & Cell Sorting

-Drosophia

-Genomics and Bioinformatics

-MicroCat SPECT

-Molecular Resource Center

-Laser Capture Microdissection

-Mass Spectrometry

-Neuroscience Imaging

Ⅲ. 研究助成と資源

1．政府（Federal Government）による研究助成

2．州・地域における研究助成

3．民間における研究助成
- 財団によるサポート
- 企業によるサポート
- 個人によるサポート

Biomedical Research Grants

Federal Government Grants

-National Institutes of Health (NIH)
-National Science Foundation (NSF)
-United States Department of Agriculture (USDA)
-United States Environmental Protection Agency

State and Regional Grants

-Educational Grants

National Institutes of Health

Most biomedical research in the United States is supported by the Federal Government, and primarily by the National Institutes of Health (NIH)

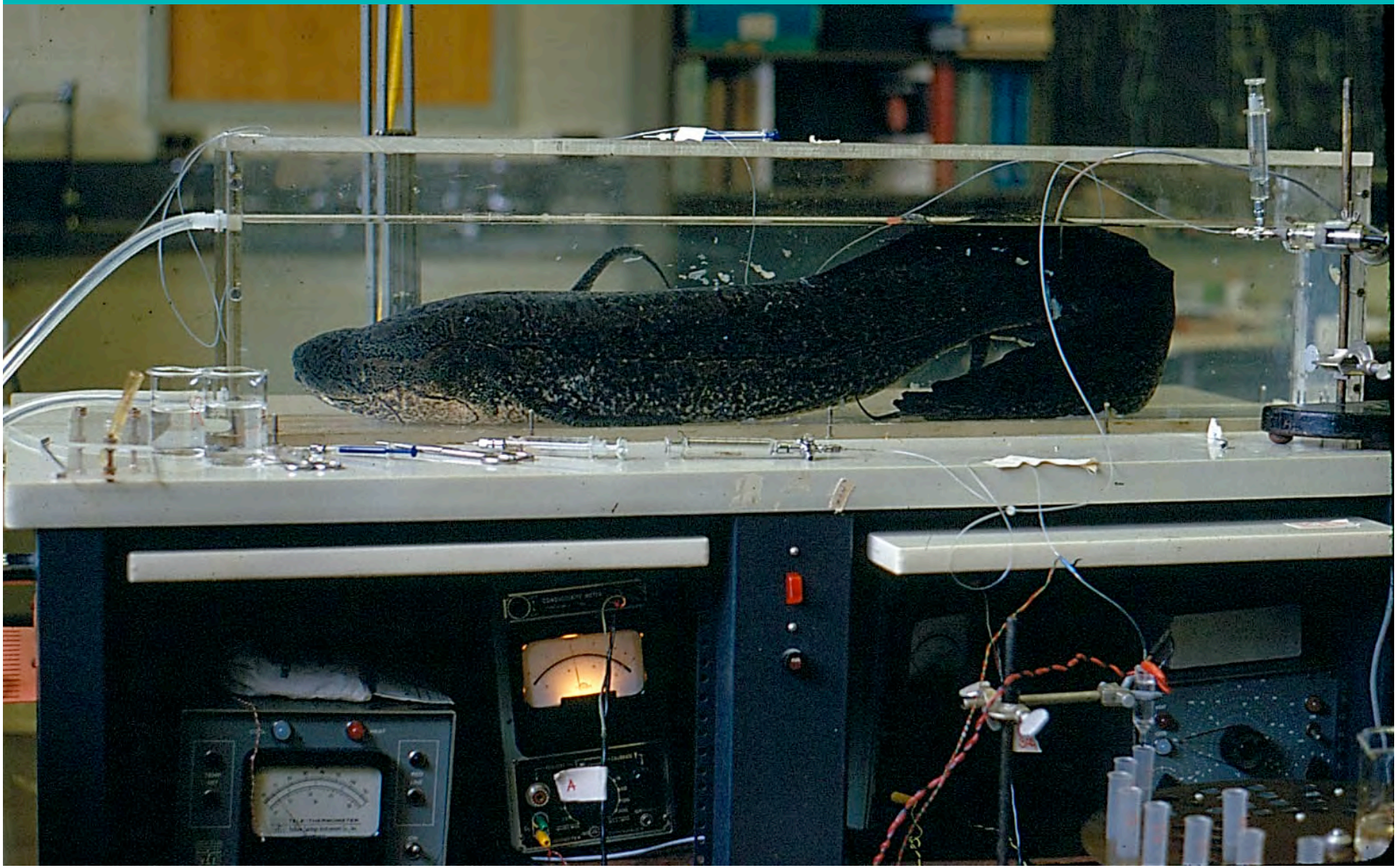
Goals of National Instutue of Health

1. Foster fundamental, creative research strategies.

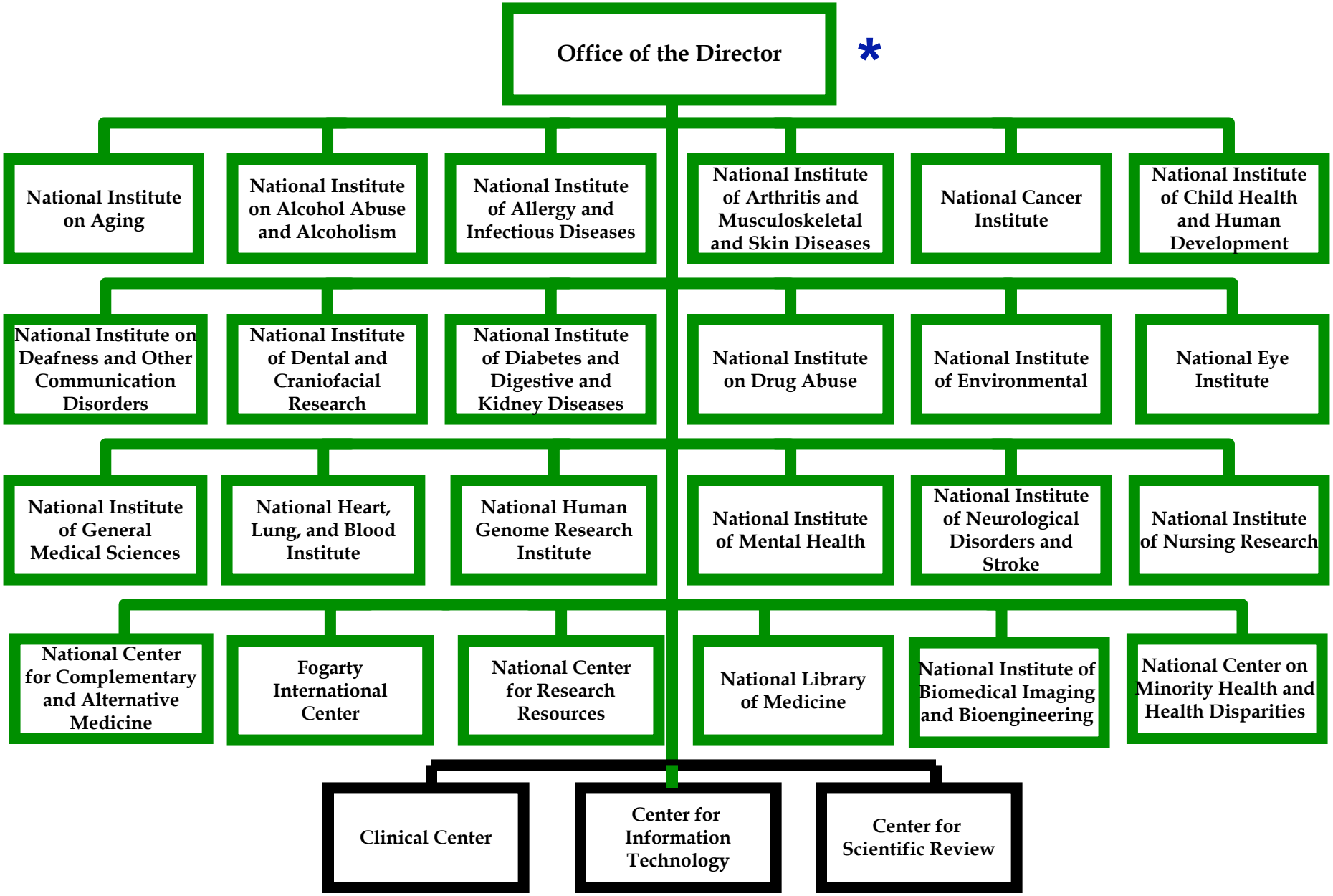
2. Develop and maintain scientific resources to prevent diseases.

3. Expand knowledge base to enhance Nation's economic wellbeing. Ensure a high return on public investment on research.

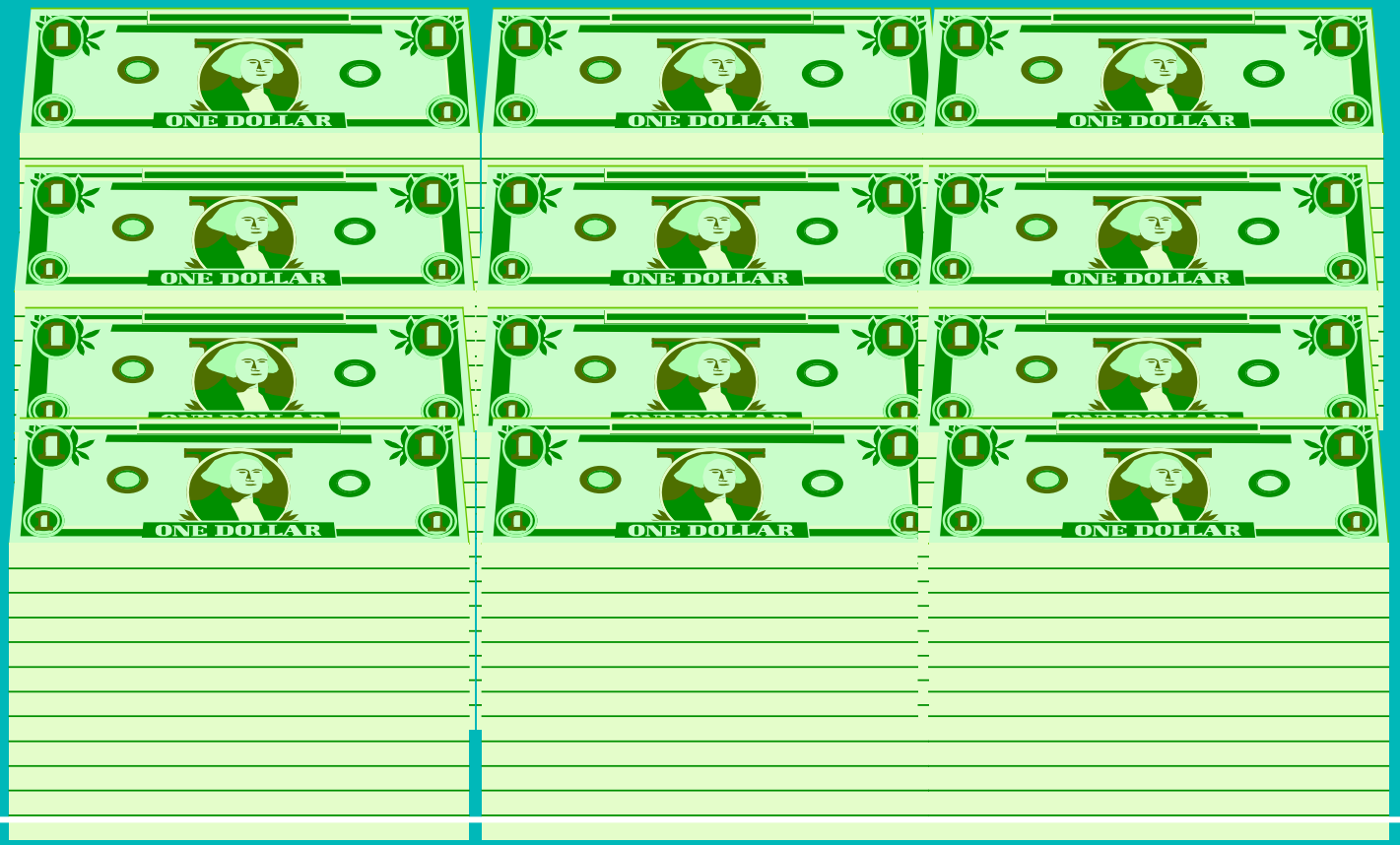
4. Promote the highest level of scientific integrity



National Institutes of Health



NIH 2003 Budget
27+ Billion



25+ Billion for Extramural Research
i.e. money for your research

Types of NIH Grant Programs

-Research Grants (R series)
-Career Development Awards (K series)
-Research Training and Fellowships (T & F series)
-Program Project/Central Grants (P series)
-Resource Grants (various series)
-Trans-NIH Programs
-Inactive Programs (Archive)

NIH Research Grants (R series)

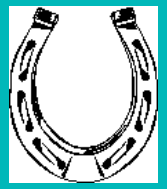
-NIH Research Project Grant Program (R01)
most commonly used grant program, 3-5 yrs
-NIH Small Grant Program(R03)
Pilot, new research technology, etc., 2 yrs grant
-NIH Academic Research Enhancement Award (AREA)
-NIH Exploratory/Developmental Research Grant
-NIH Clinical Trial Planning Grant Program
-Small Business Innovative Research
-NIH High Priority, Short-term Project Award
-and more

Elements of Grant Success

Good Ideas

Good Reviewers

Good Timing



Good Luck

Good Presentations

Good Grantsmanship

NIH GRANT$

Formula for Grant Success

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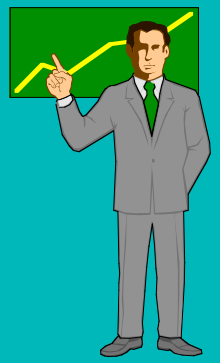

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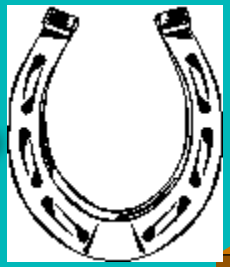

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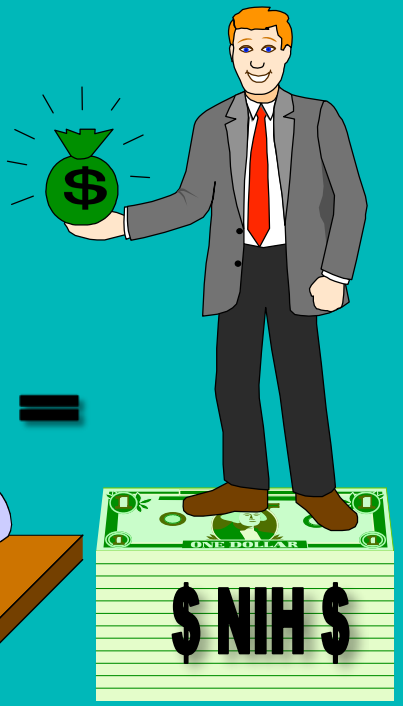


Good Grantsmanship

* Knowing + Understanding
  - What to do
  - How to do it
  - When to do it
  - What to do when things don't go as planned
* Being willing to do what is needed
  - Passion and Commitment
* Doing it- doing what is needed
  - Commitment
* Understanding Peer Review

Dual Review System for Grant Applications

First Level of Review

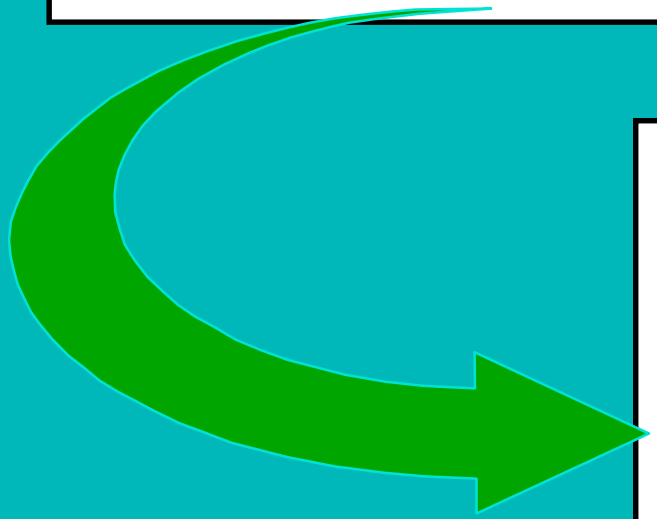
Scientific Review Group (SRG)

Provides Initial Scientific Merit

Review of Grant Applications

Rates Applications and

Recommends for Level of Support and Duration of Award



Second Level of Review

Advisory Council

Assesses Quality of SRG Review of Grant Applications

Makes Recommendation to Institute Staff on Funding

Evaluates Program Priorities and Relevance

Advises on Policy

Council Actions

Assesses quality of study section review

Concurs with study section action

or

Modifies study section) action

Can not change priority score

- Deferral for re-review of the same application – no changes allowed

Makes Recommendation to institute staff on funding, Evaluates program priorities and relevance and advises on policy

Typical Timeline for a New Individual Research Project Grant Application (R01)

There are three overlapping cycles per year:

	Cycle 1----	Cycle 2----	Cycle 3----
–Submit in	February	June,	October
–Review in	June	October,	February
–Council in	September	January,	May
–Earliest award	December	April,	July


FEDEX BOX
EXPRESS

Review of Research Grants

REVIEW CRITERIA:

- Significance
- Approach
- Innovation
- Investigator
- Environment

Scientific Review Group or Study Section Actions

-Scored, Scientific Merit Rating

-Priority scores:

1 (best) to 5 (poorest) and percentiles

-Unscored (lower half)

-Deferral

Animal Welfare

Important Considerations

1. Will the anticipated results be for the good of society?
2. Will the work be planned and performed by qualified scientists?
3. Will the animals be treated so as to avoid any unnecessary discomfort, pain, anxiety, or poor health?
4. Species chosen?

   Animals in short supply?

Inclusion of Women and Minorities in Clinical Research

- **Women and Minorities** must be considered for inclusion in all clinical research supported by NIH

or

- **Appropriate justification** must be provided to explain why they are not included in the proposed research

American Heart Association Grant

National Level

-Grant-in-Aid
-Scientist Development Grant
-Established Investigator
-Fellow-to-Faculty Transition Award

Affiliate (Regional) Level

-Grant-in-Aid
-Scientist Development Grant
-Clinical Research Program
-Postdoctoral Fellowship
-Predoctoral Fellowship

Local Research Grants

Local (intra campus, etc) Grant

-Bridge Funding (Interim support)

-Pilot Project Grant

-Specialized Center Grant

Faculty Research Incentive Programs

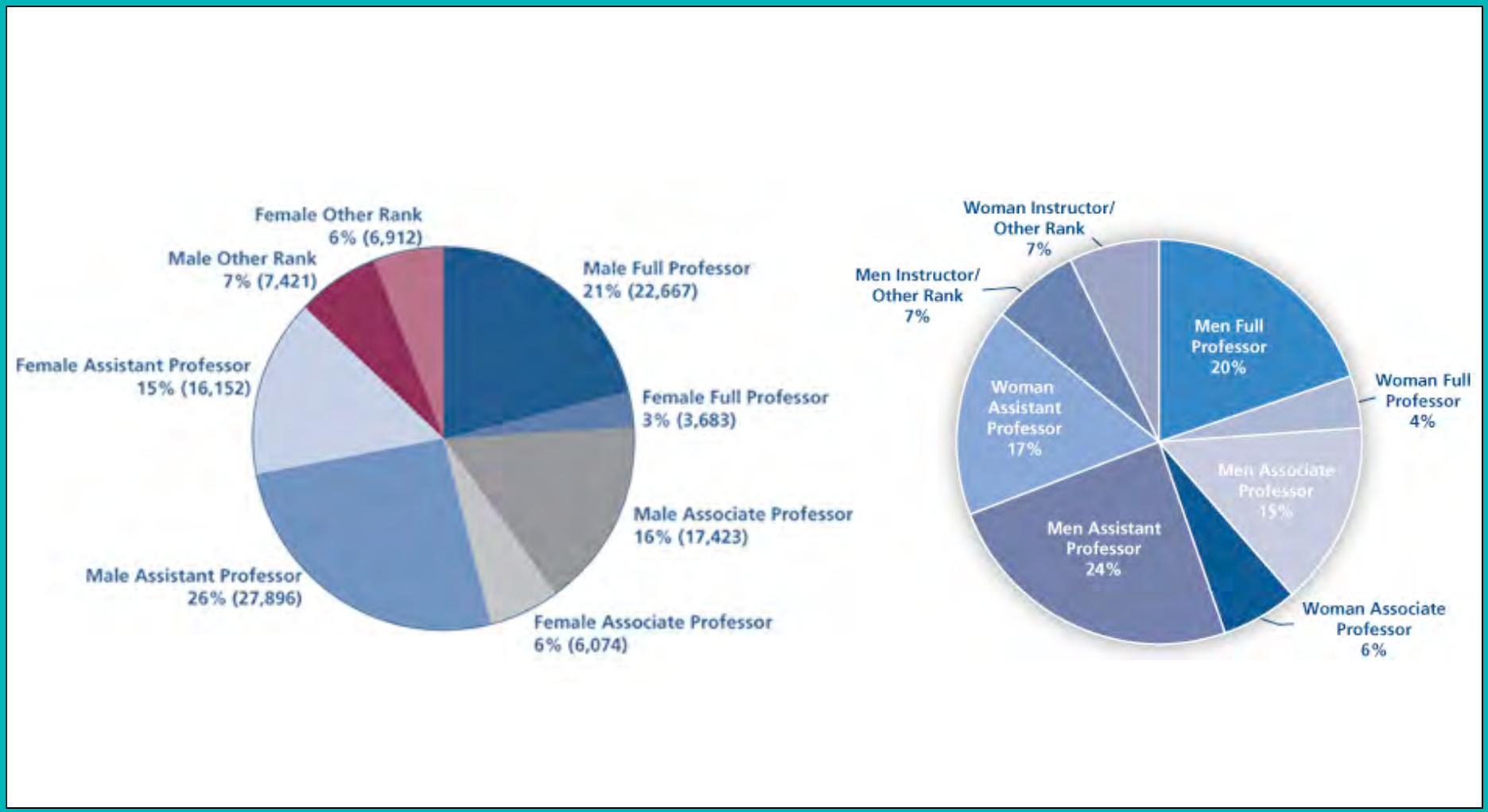
Qualified Principal Investigator who contributes external grant to replace state dollars for salary, may receive 50% of the excess above the threshold level.

Ⅳ. 女性研究者の現状

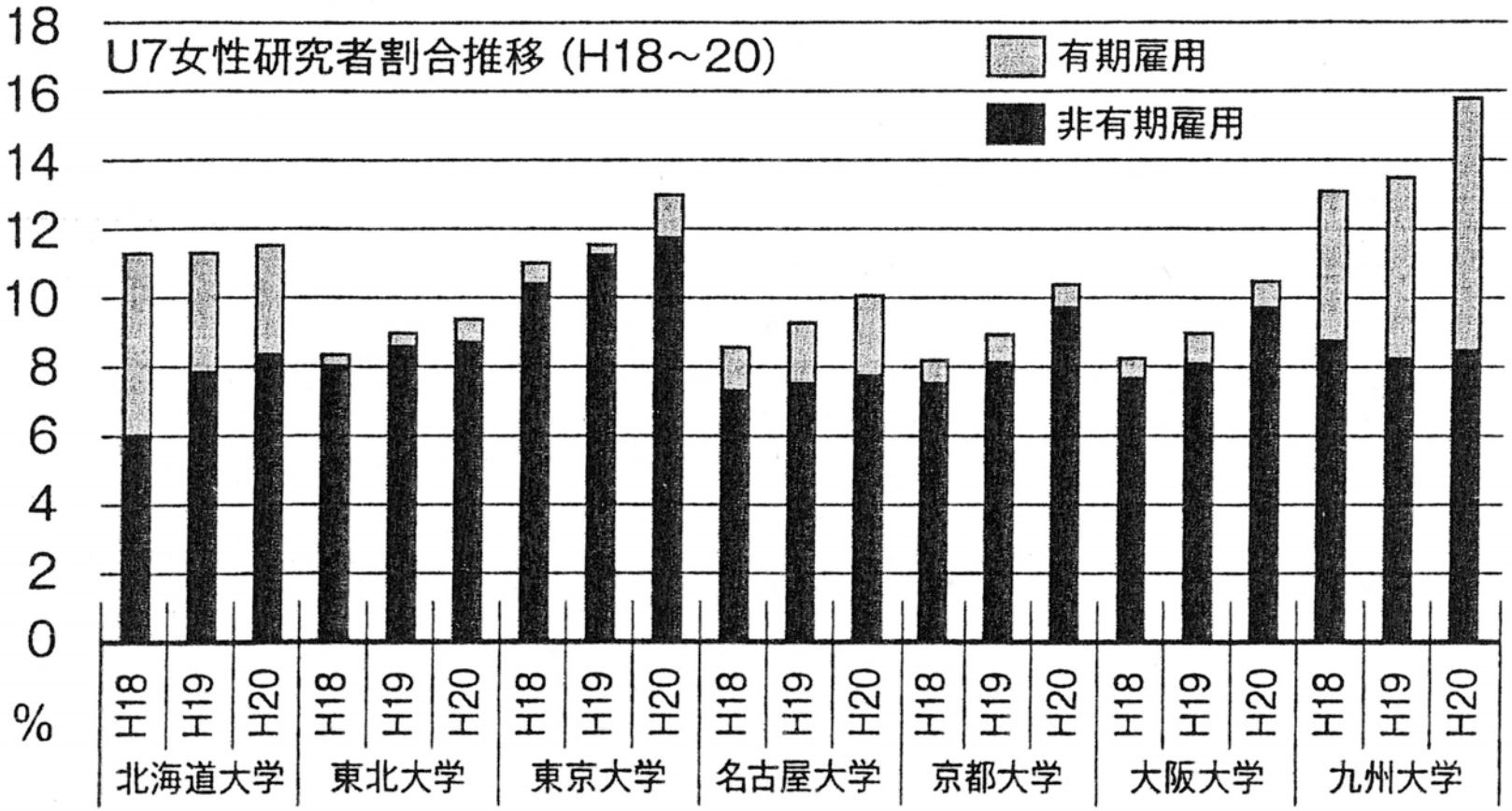
1. 研究者数とPosition
2. “Career Development”の支援機構
3. 機会の平等性と問題点

US Medical Faculty by Gender and Rank

2003-2004 2007-2008

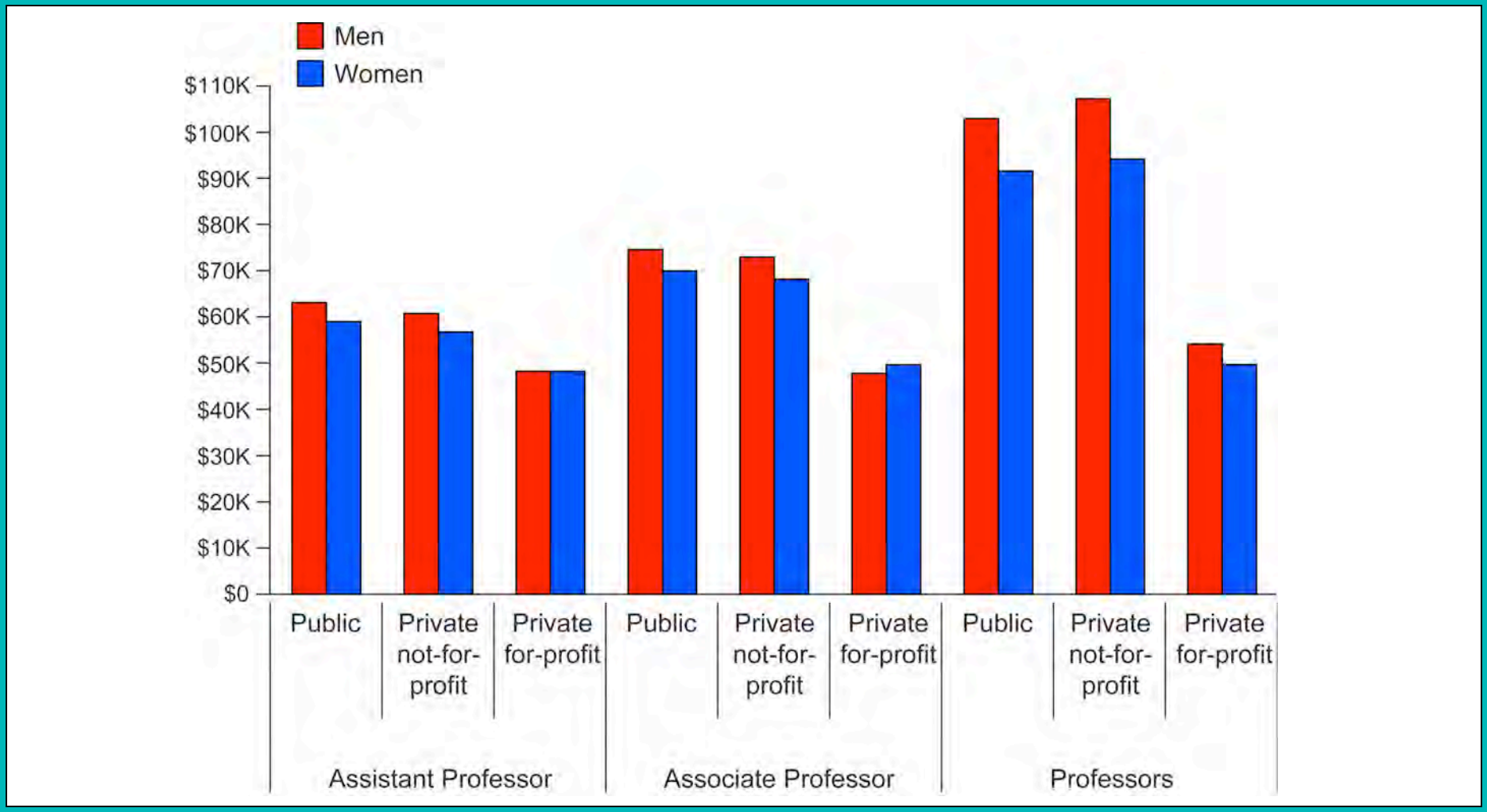


Female Scientists (ratio) in Seven Major Universities in Japan

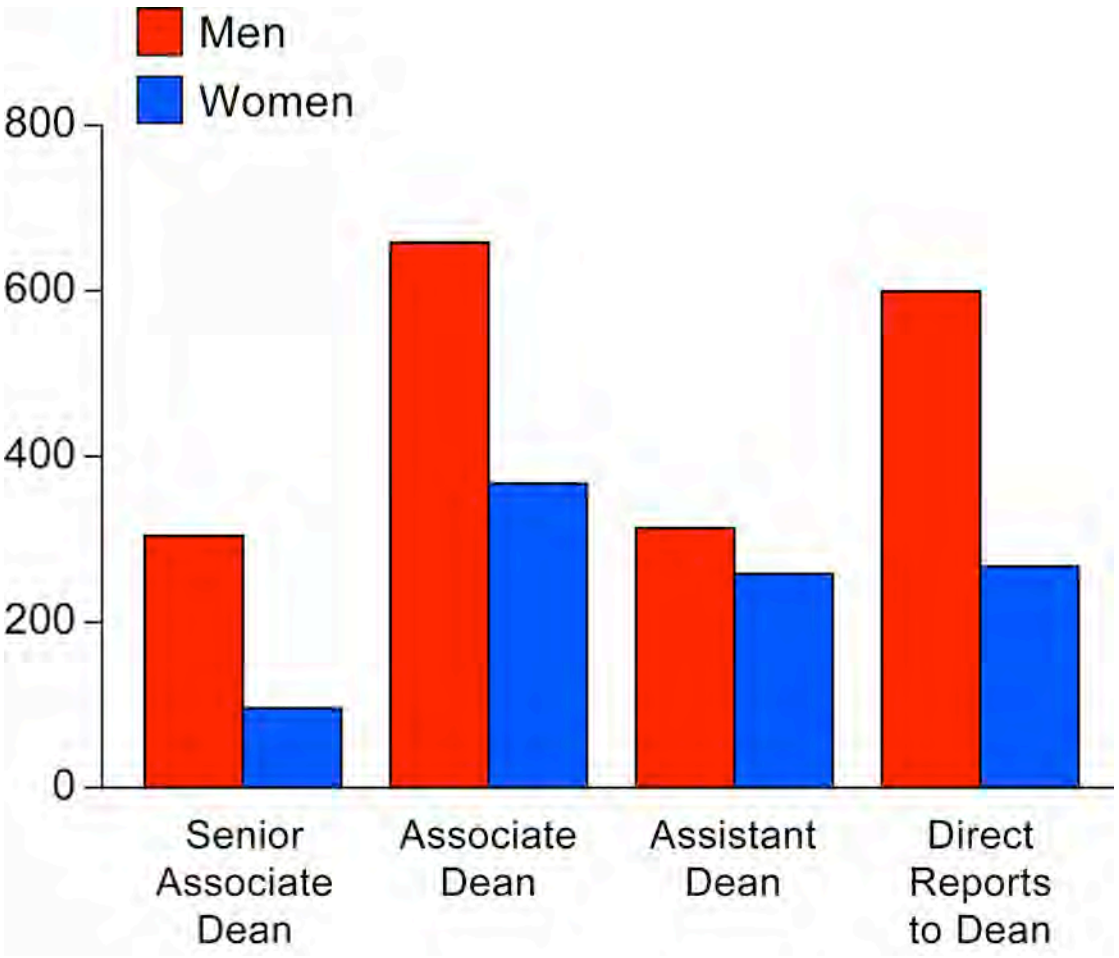


Average Salaries of Full-Time Faculty

2007-2008 Academic Year -



2007 Leadership Positions in US Medical Schools



現在の“バイオメディカルリサーチ”および研究助成機構の問題点

Individualism and Global Research

Individualism

-Traditional approach in US
-Important for new ideas and innovation
-Unstable resources
-Tend to lack continuity

Global Research

-Requires an excellent team leader
-Requires flexible team players
-National and international collaboration and interaction are essential
-Required national/international organization

現在の“バイオメディカルリサーチ”および研究助成機構の問題点

1．研究資金の不足と偏在、
“Core facility”の 不足。

2．持続性が不安定である。

3．独創性のある個人研究や、息の長い研 究を続けることが難しい。

4. 研究資金の有無が研究の方向性や課題を決める。
   –学問的に優れていても資金を獲得しにくい分野 や研究は進まない。

5. 研究資金獲得の能力が研究者の“Career Advancement / Promotion”を決める。
   –研究生活の安定性を欠く。

6. 研究資金獲得の競争が非常に激しく、研究者として仕事を発展させる大切な時期にグラント書きに追われる。

Ⅴ. 日本における研究体制および研究助成との比較
- 何が必要か -

研究助成

1. 研究助成資金の多様性と支援額の向上をはかる。
   一年度における応募回数を増やす。

2. 地域における支援と財団による支援の向上を はかる。

3. 大学やHealth Science Center内における研究助成金を増加する。
   - Interim Support
   - Pilot Grant

研究体制

1. 多くのCoreの設立と運営管理の充実をはかる。

2. Animal　ethics / welfare の充実とNational level の Crediting systemを設立する。

3. Grant administration と Handling をInternational level で行なえるよう道をつける。

4. 所属機関、性別、年令に関わらぬ広い人材の活用を進める。

5. International collaboration や Global research の推進を進める 。