

*Verein Presents a Series:*

# Jews in Science

## Washington University's Jewish Nobel Laureates

By Ralph Graff

Washington University  
Student and  
25-year faculty member



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# Jews in Science

In 1953,  
when I started  
medical school,  
Washington  
University  
claimed six  
Nobel



C. Cori J. Erlanger G. Cori A. Compton. Two, J Erlanger and G. Cori, were Jewish (Doisy and Gasser are absent).



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# Jews in Science

## Washington University's Jewish Nobel Laureates

| Name                 | Category               | Year | Subject  |
|----------------------|------------------------|------|--|
| Joseph Erlanger      | physiology or medicine | 1944 | Different functions of individual nerve fibers |
| Gerty Cori           | physiology or medicine | 1947 | Catalytic conversion of Glycogen               |
| Arthur Kornberg      | physiology or medicine | 1959 | Synthesis of DNA & RNA                         |
| Daniel Nathans       | physiology or medicine | 1978 | Restriction enzymes                            |
| Paul Berg            | chemistry              | 1980 | Biochemistry of nucleic acid                   |
| Rita Levi-Montalcini | physiology or medicine | 1986 | Growth factors                                 |
| Stanley Cohen        | physiology or medicine | 1986 | Growth factors                                 |
| Robert Furchgott     | physiology or medicine | 1998 | Nitric acid as signal molecule                 |
| Aaron Ciechanover    | chemistry              | 2004 | Ubiquitin-mediated protein degradation         |

**Rita Levi-Montalcini**

**Physiology/Medicine**

**1986**

**Growth factors**





© RITA LEVI-MONTALCINI  
MDO-04565112 - agefotostock







334 x 500 ape

Source: Getty Images





**Stanley Cohen**

**Physiology/  
Medicine**

**1986**

**Growth factors**



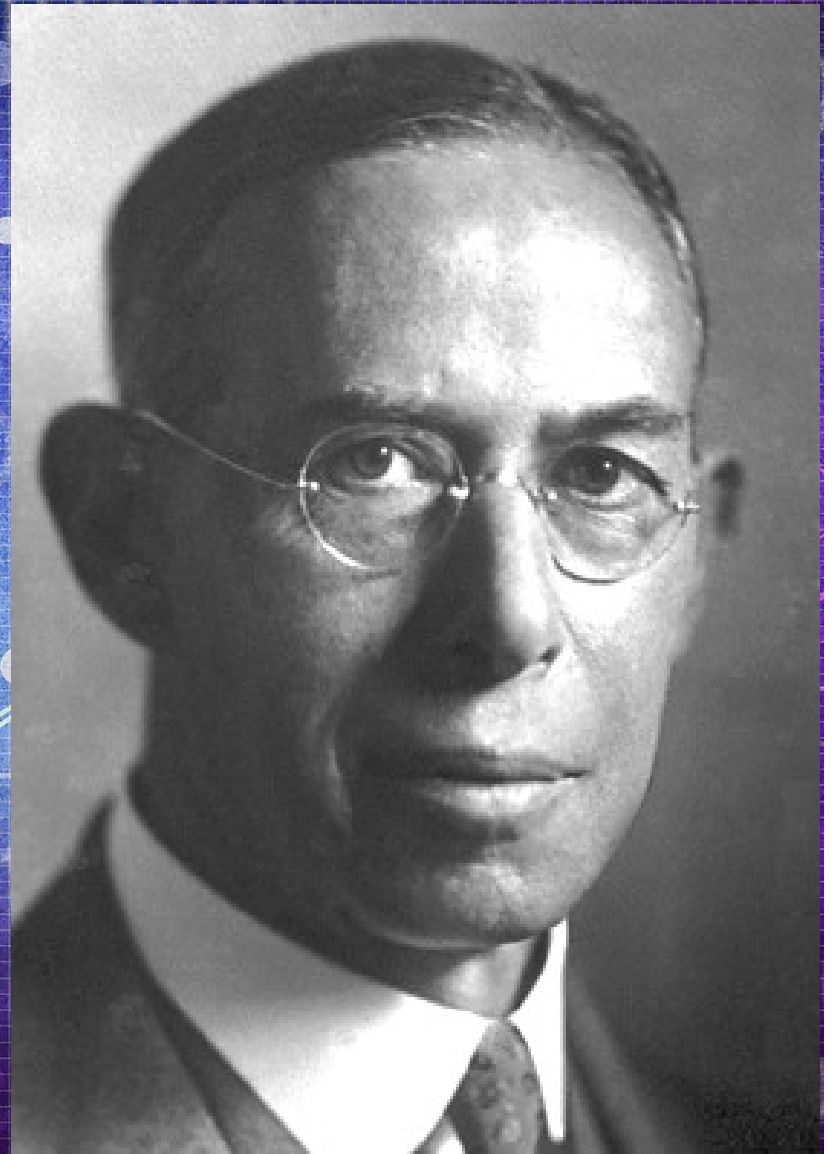
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# Jews in Science

**Joseph Erlanger**  
**Physiology /Medicine**

**1944**

**Differentiated  
functions of single  
nerve fibers**







270 x 410 *Spencer*

7-5 MARKET STREET.



# Erlanger home





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**Gerti Cori**  
Physiology/  
Medicine

**1947**

**Catalytic  
conversion  
of glycogen**











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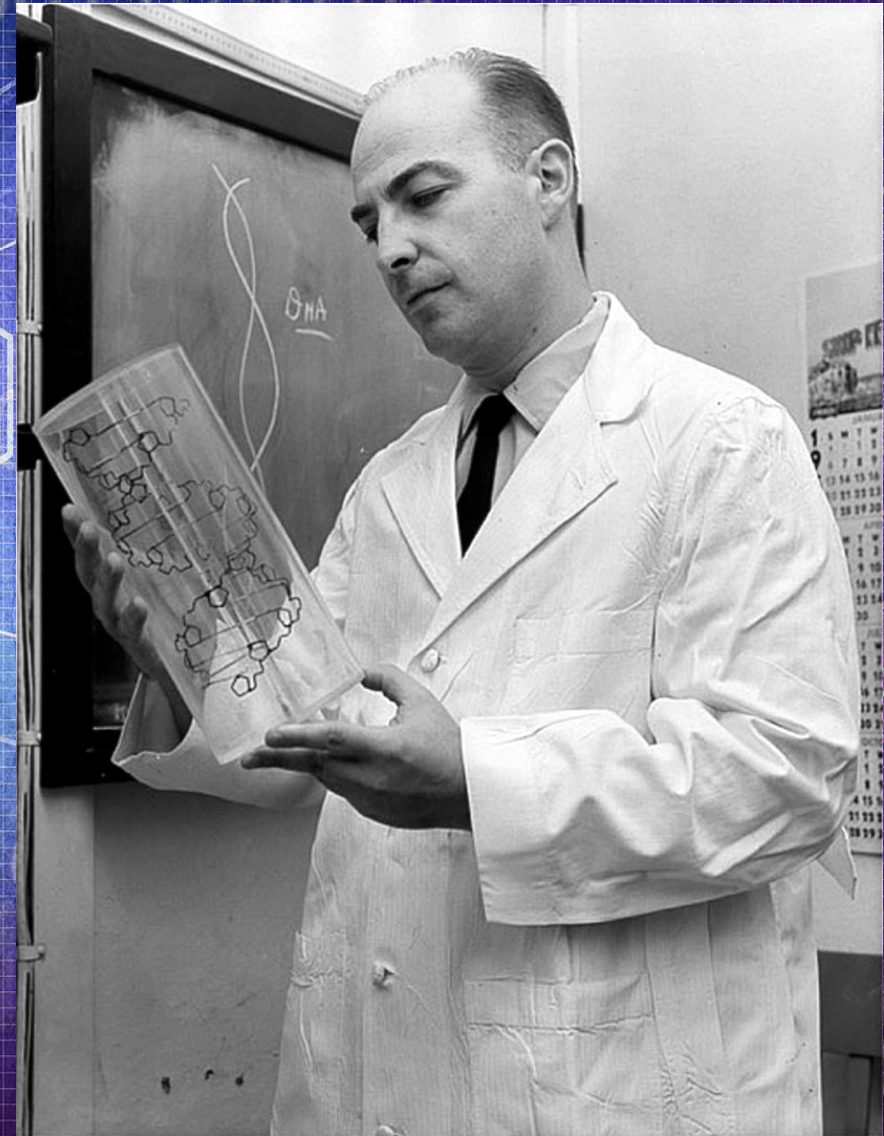
# Jews in Science

**Arthur Kornberg**

**Physiology  
/Medicine**

**1959**

**Synthesis of RNA  
and DNA**





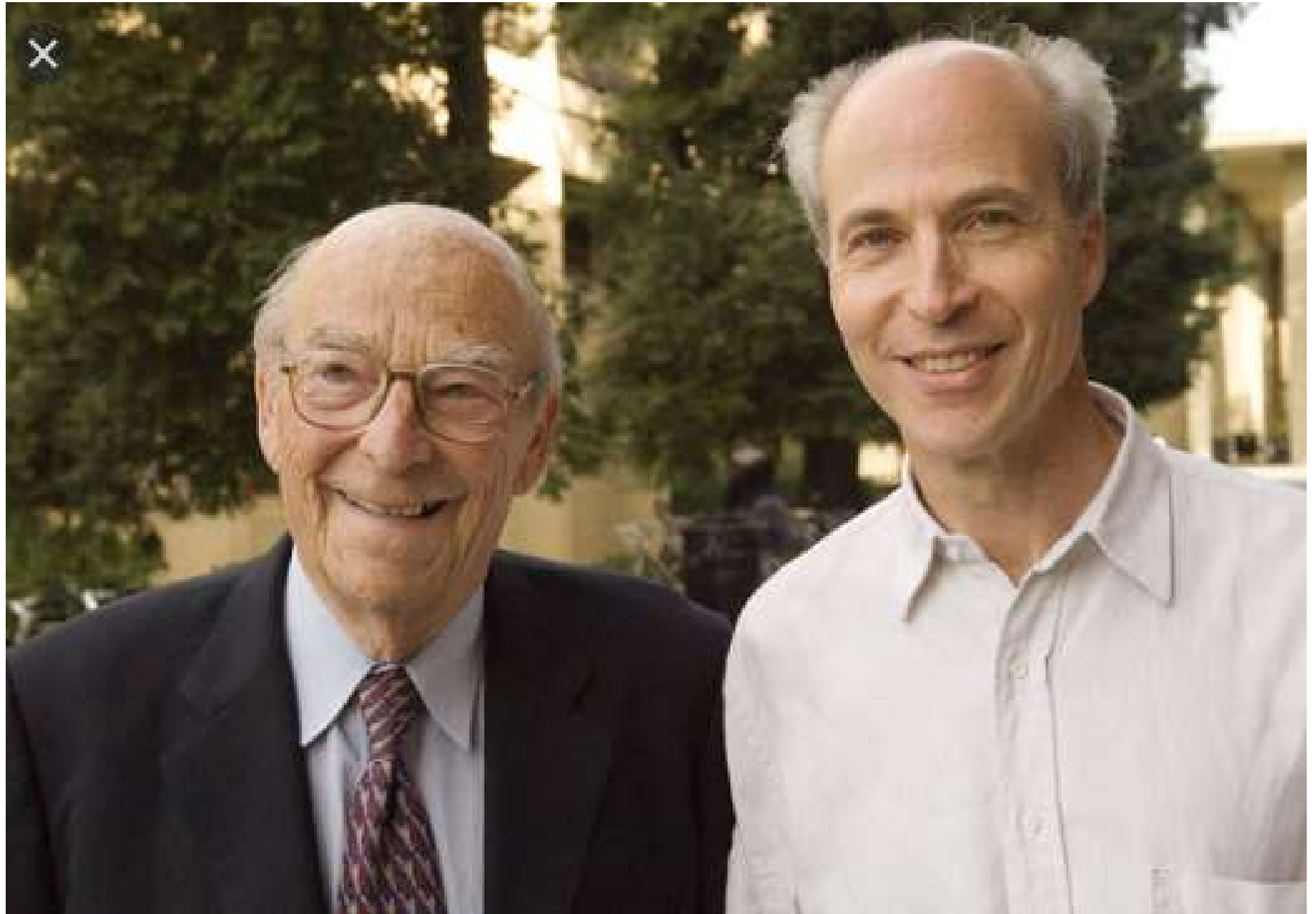




Courtesy of Dr. A. Kornberg, Stanford University. Noncommercial, educational use only.









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**Daniel Nathans:**  
**Physiology/Medicine**

**1978**

**Restriction  
enzymes**



**(class of '54)**



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**Paul Berg  
Chemistry**

**1980**

**Biochemistry of  
nucleic acids**





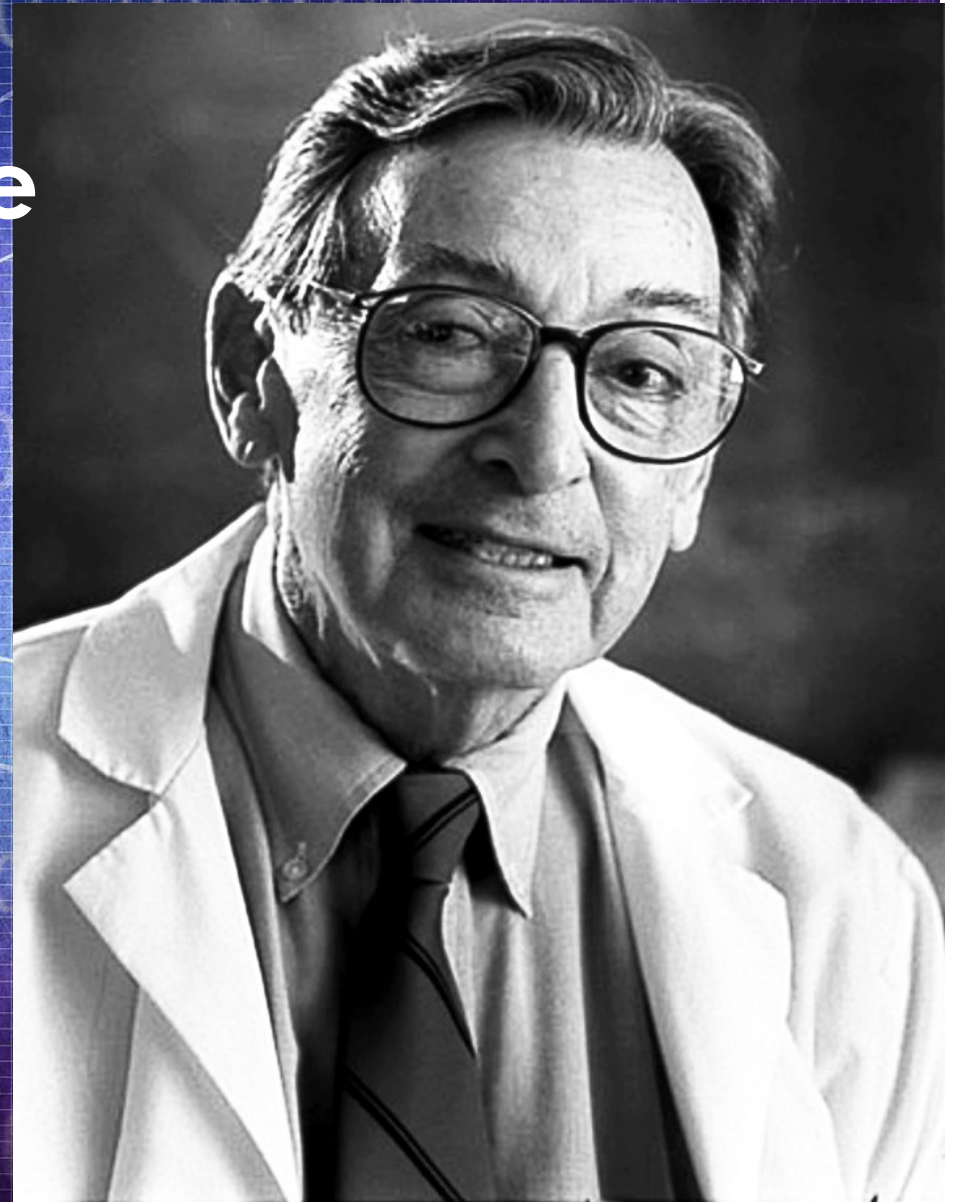
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**Robert Furchgott**  
**Physiology/Medicine**

**1998**

**Nitric acid as  
signaling molecule  
in the cardio-  
vascular system**





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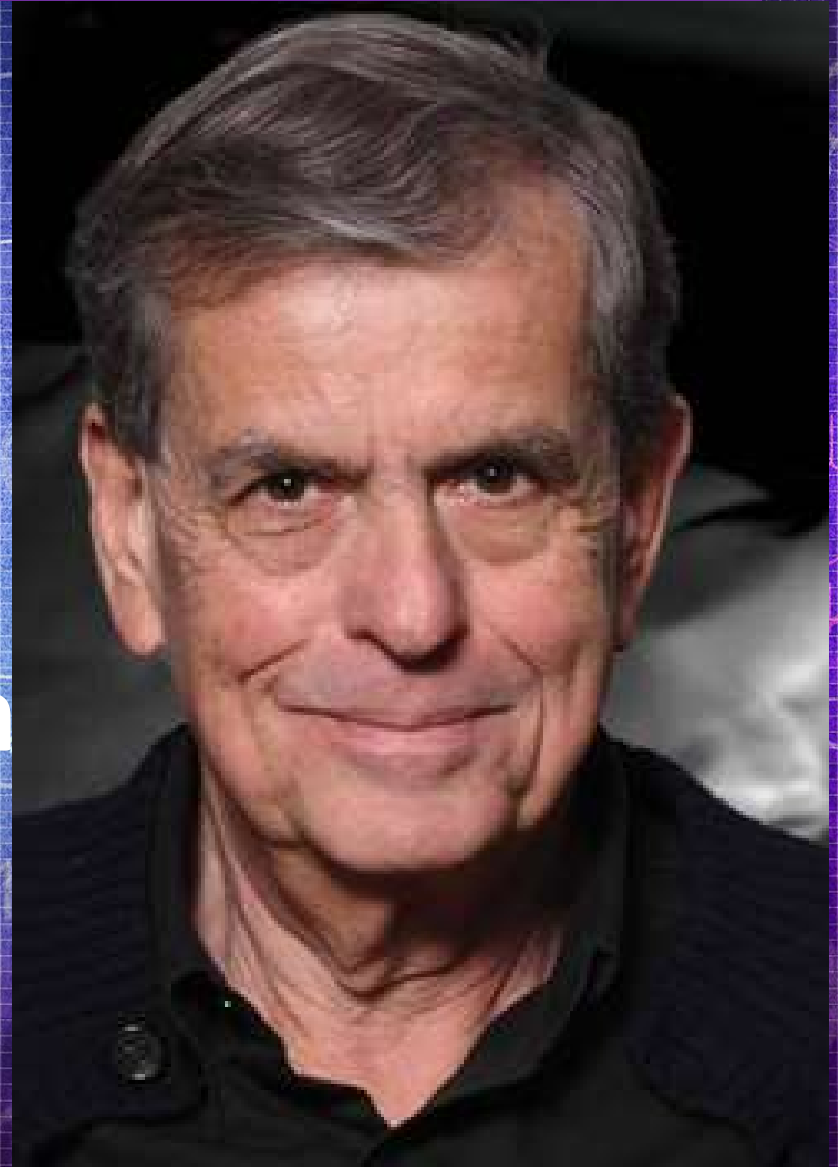
# Jews in Science

**Aaron Ciechanover**

**Chemistry**

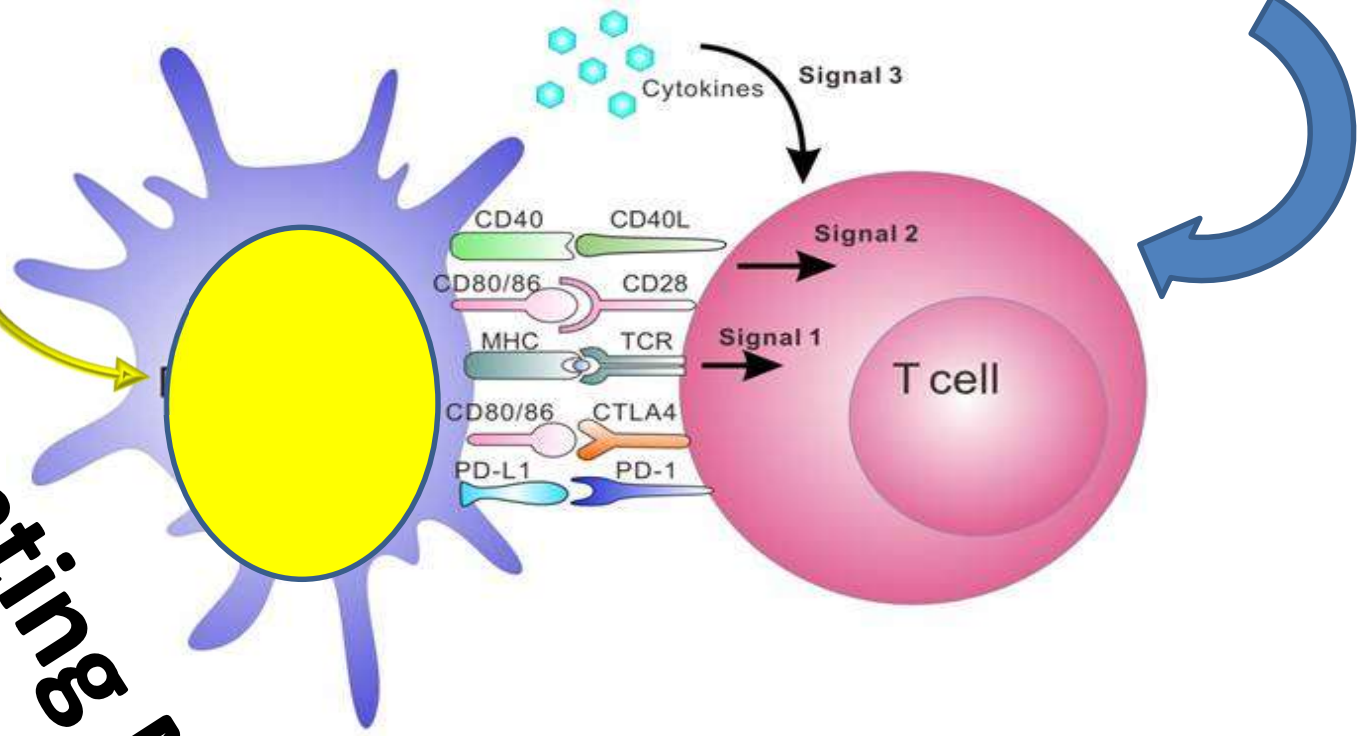
**2004**

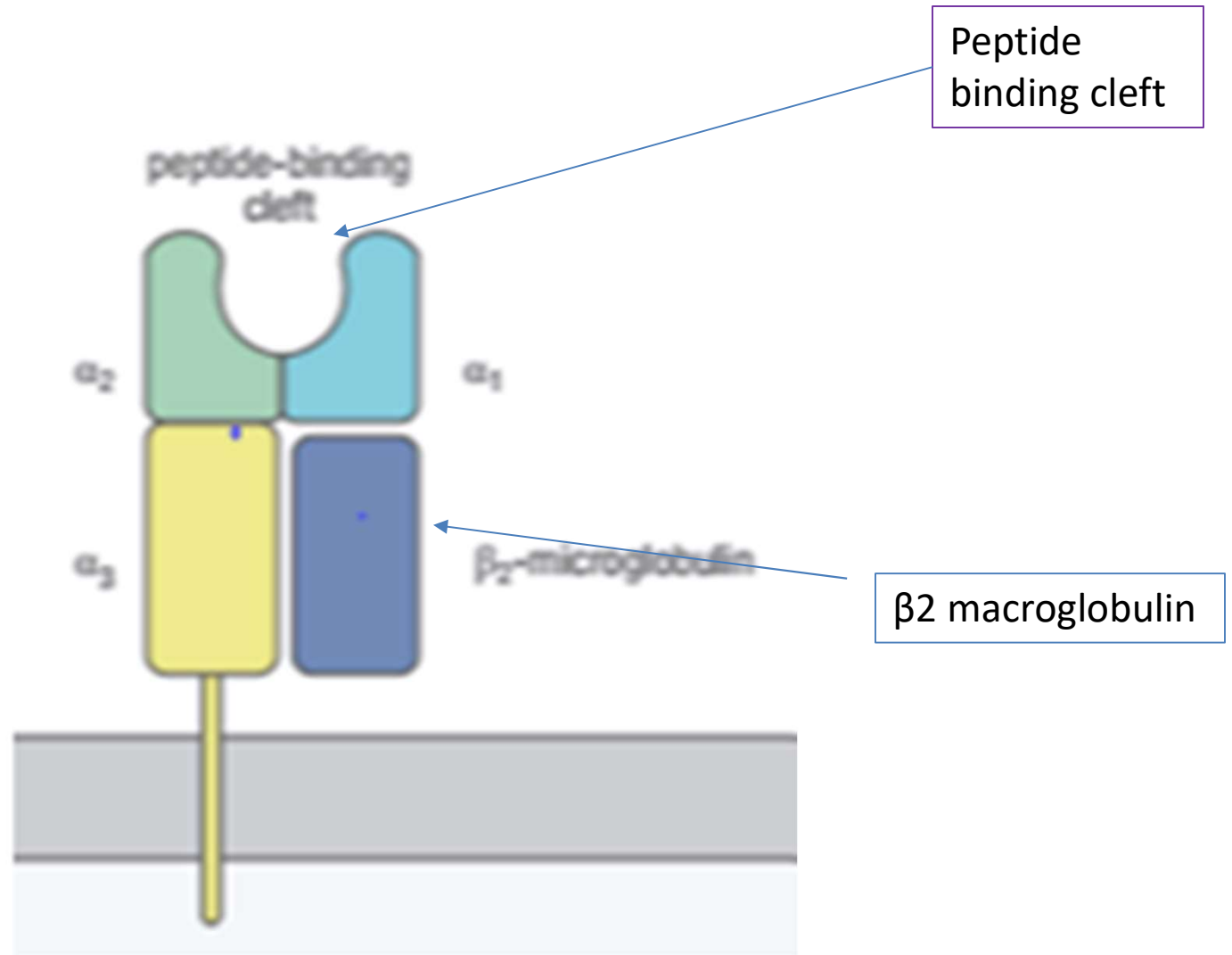
**Ubiquitin-mediated  
protein degradation**  
*(visiting Prof.  
Pediatrics)*



Antigen Presenting Molecule

T Cell



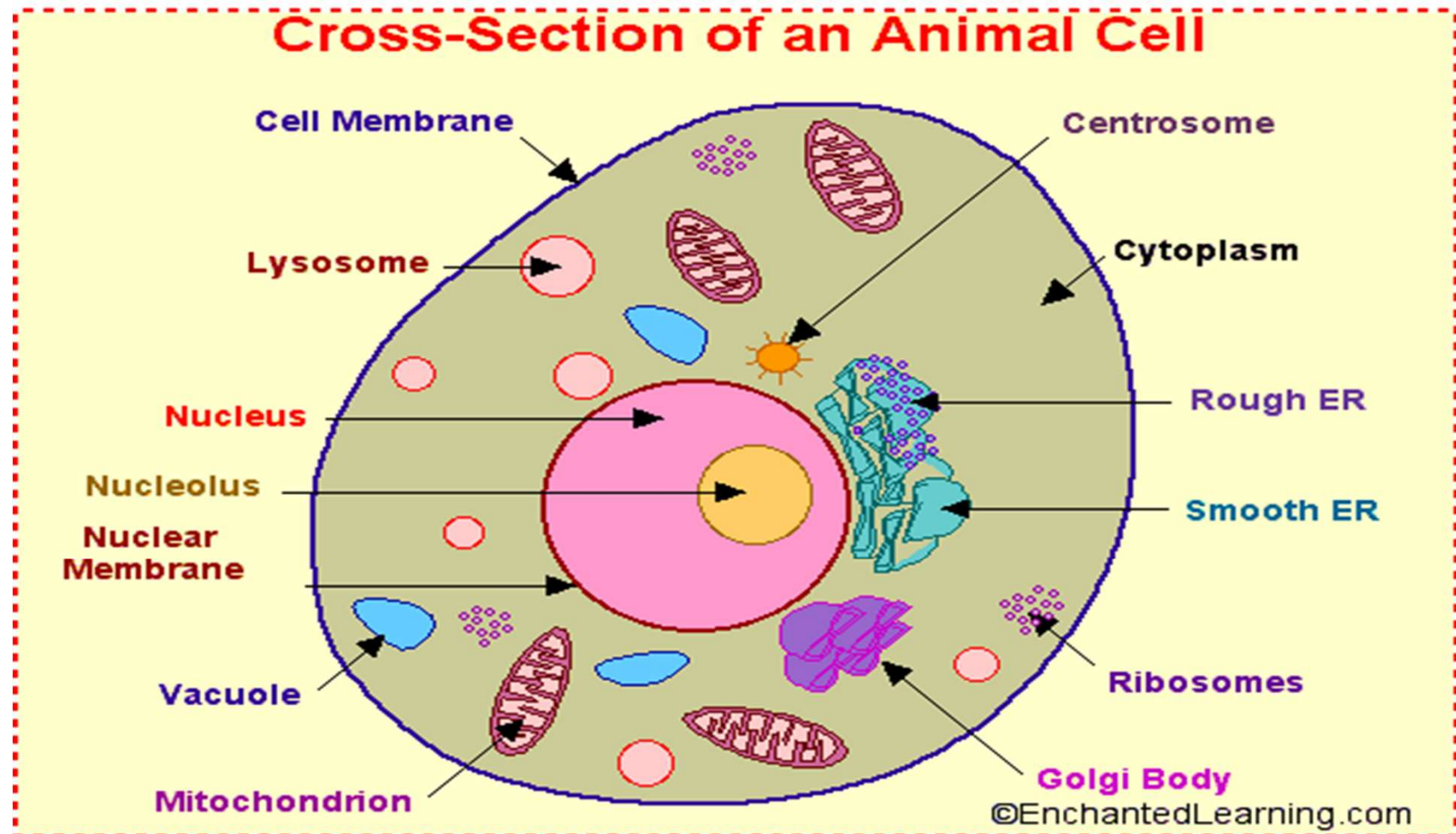


# Antigen presenting molecule



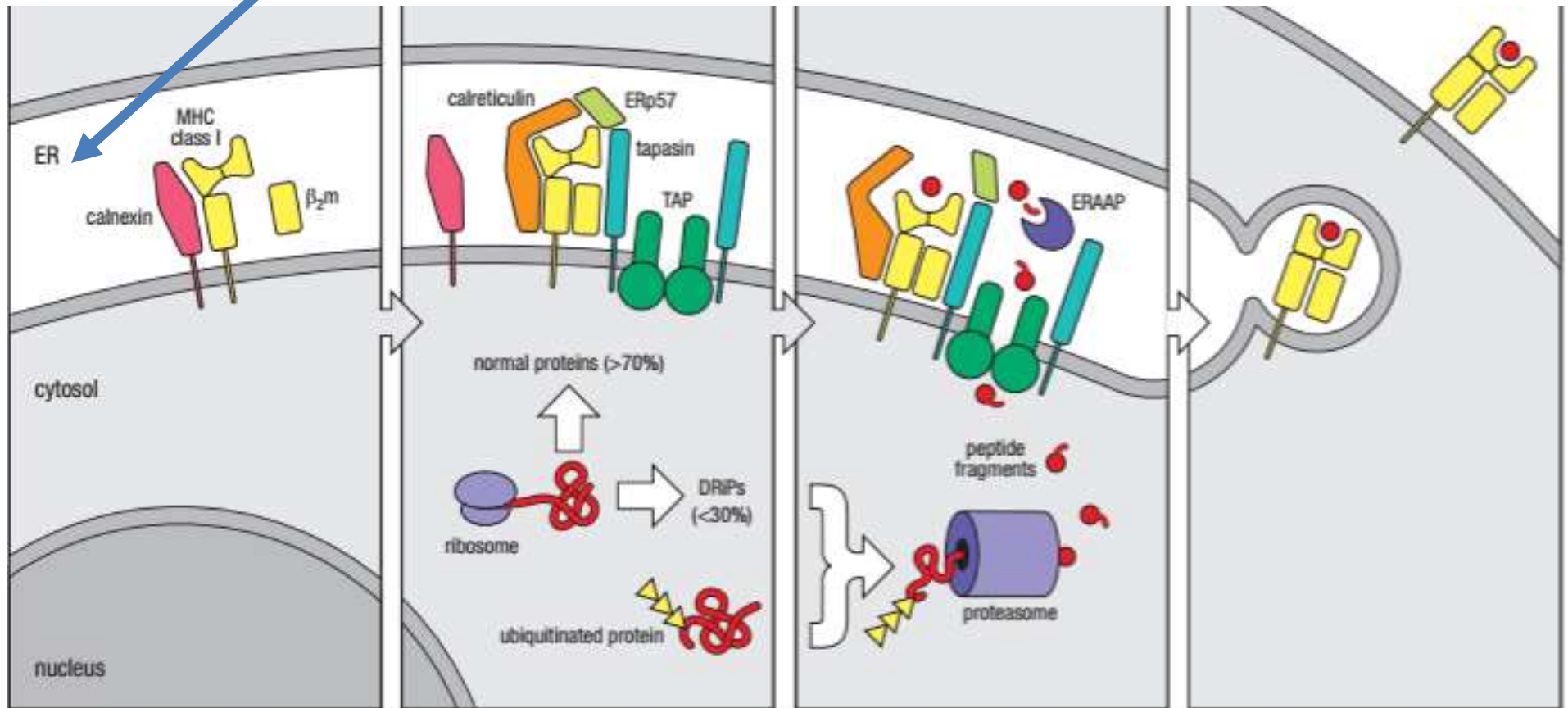
The basic unit of living tissue is the **cell**, composed of the nucleus which contains the genes and the cytoplasm which contains the machinery of life.

One of the pieces of the machinery , **Endoplasmic Reticulum (ER)** will be discussed subsequently





# ER - Endoplasmic Reticulum



**George D. Snell**

**Physiology or  
Medicine**

**1980**

**Discovery of  
histocompatibility  
genes including H-2**



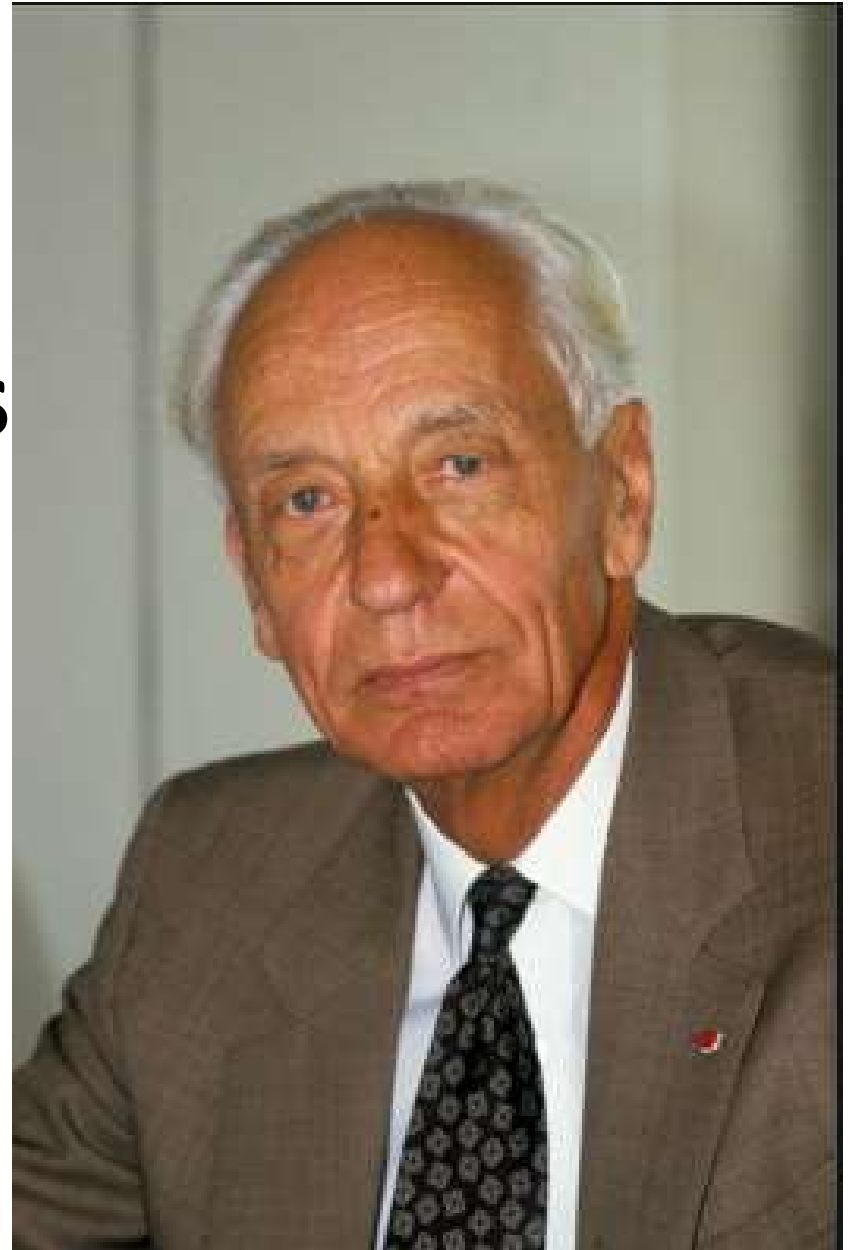


Ralph Graff with George Snell during post doctoral fellowship



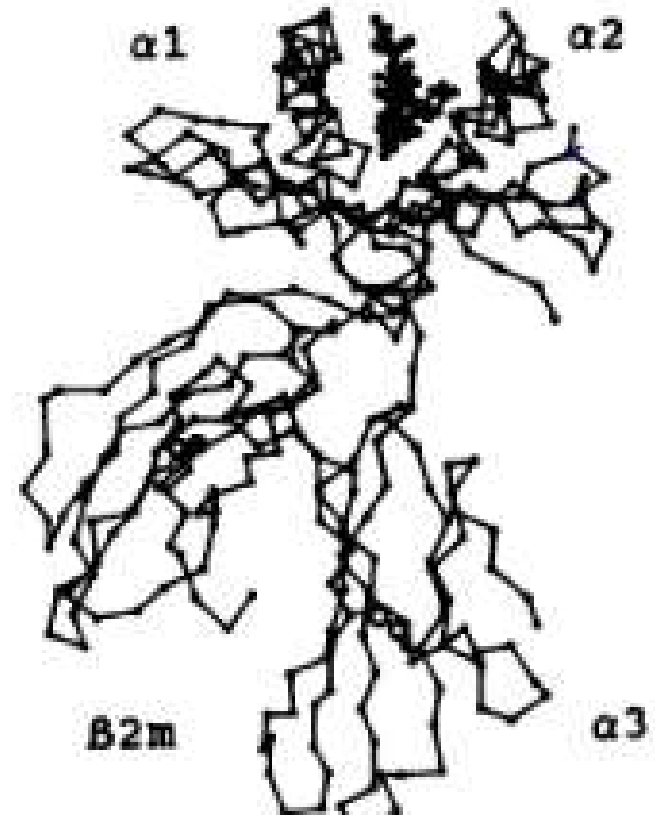
# Jean Dausset

**One of the proposers  
of HLA, (Human Leukocyte  
Antigen)  
the human counter  
part of the mouse  
H-2 genetic complex.**

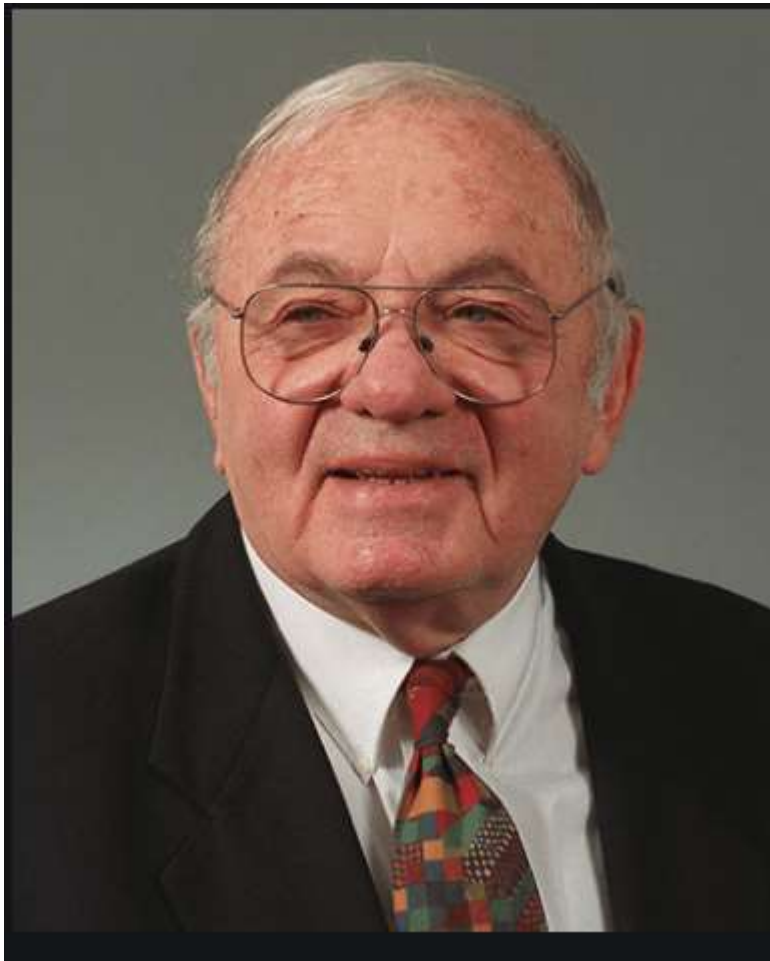




**Stanley Nathenson**



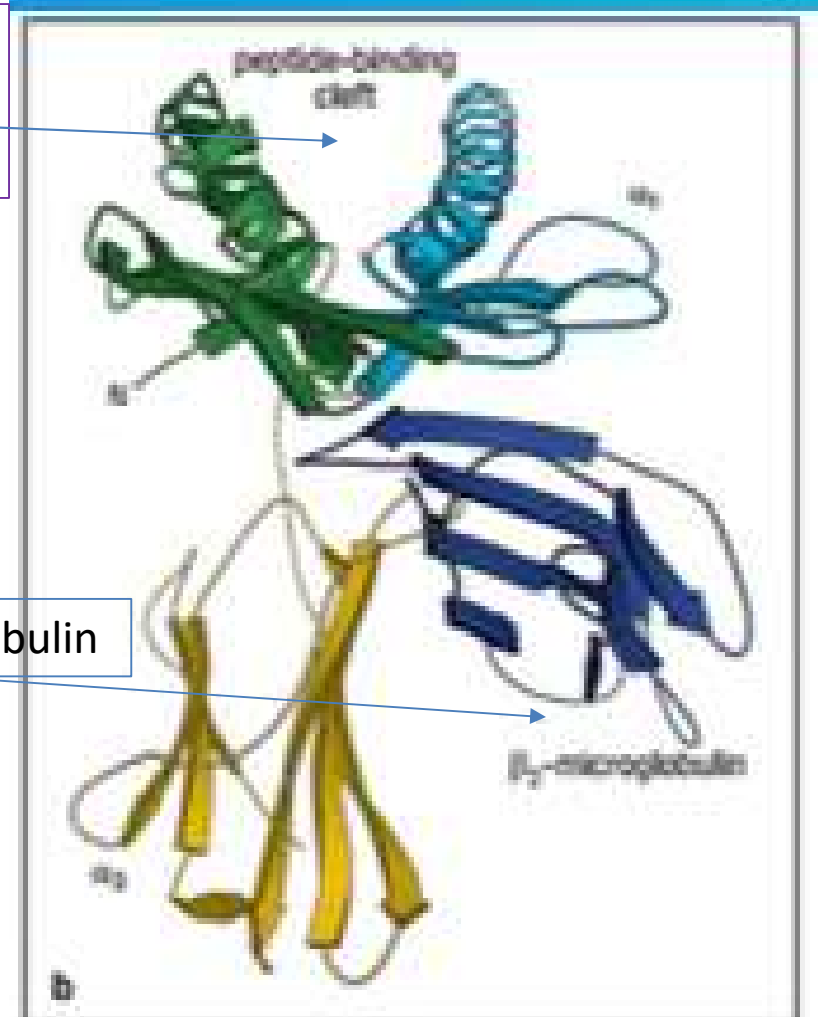
**Ribbon model  
of H-2 Molecule**



**Jack Strominger**

Peptide  
binding  
cleft

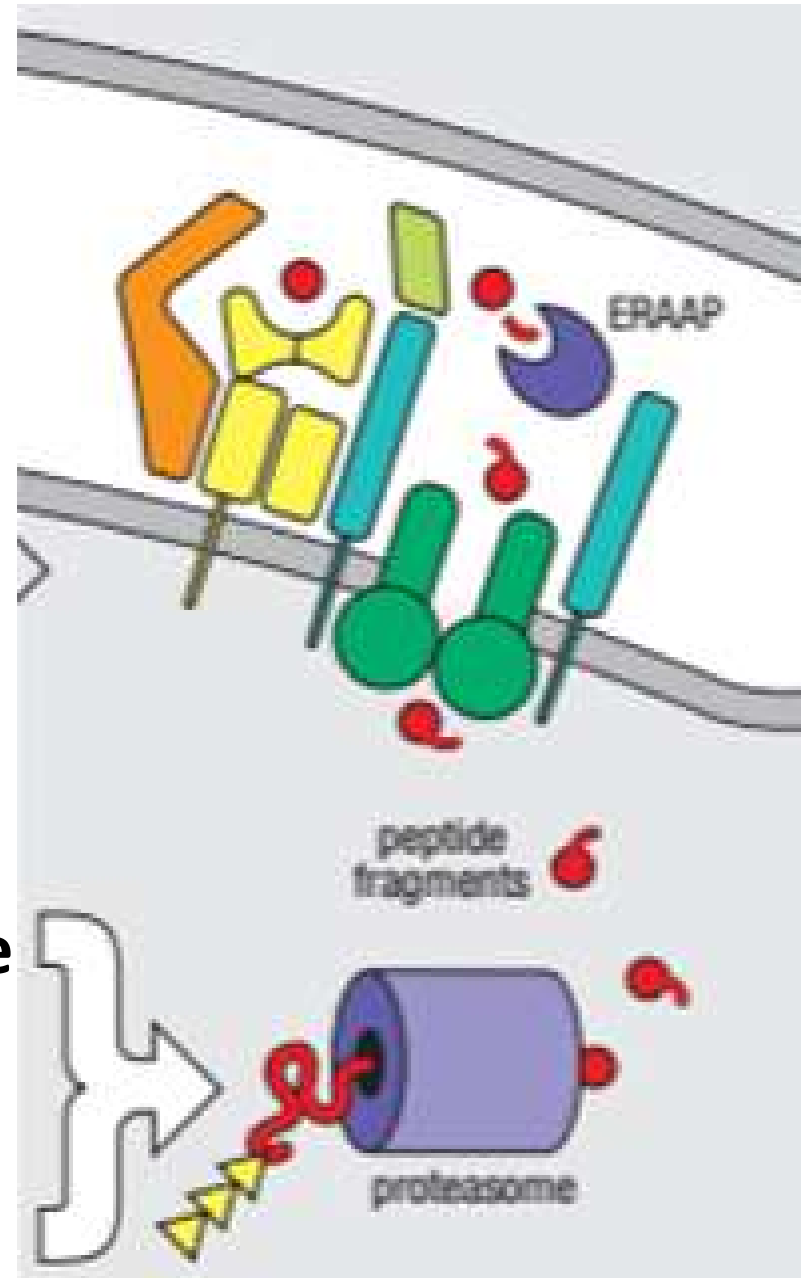
$\beta$ 2 macroglobulin



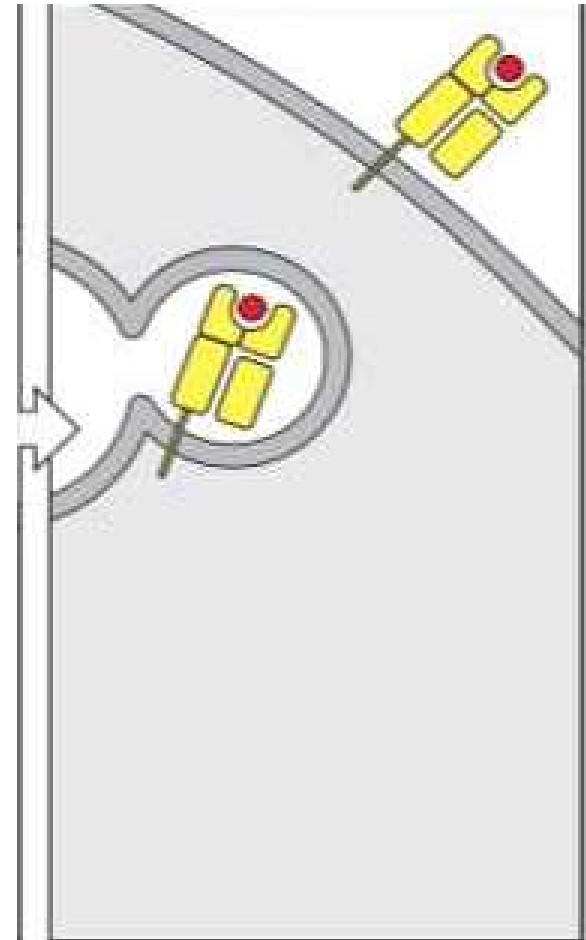
**Ribbon Model of  
HLA Molecule**

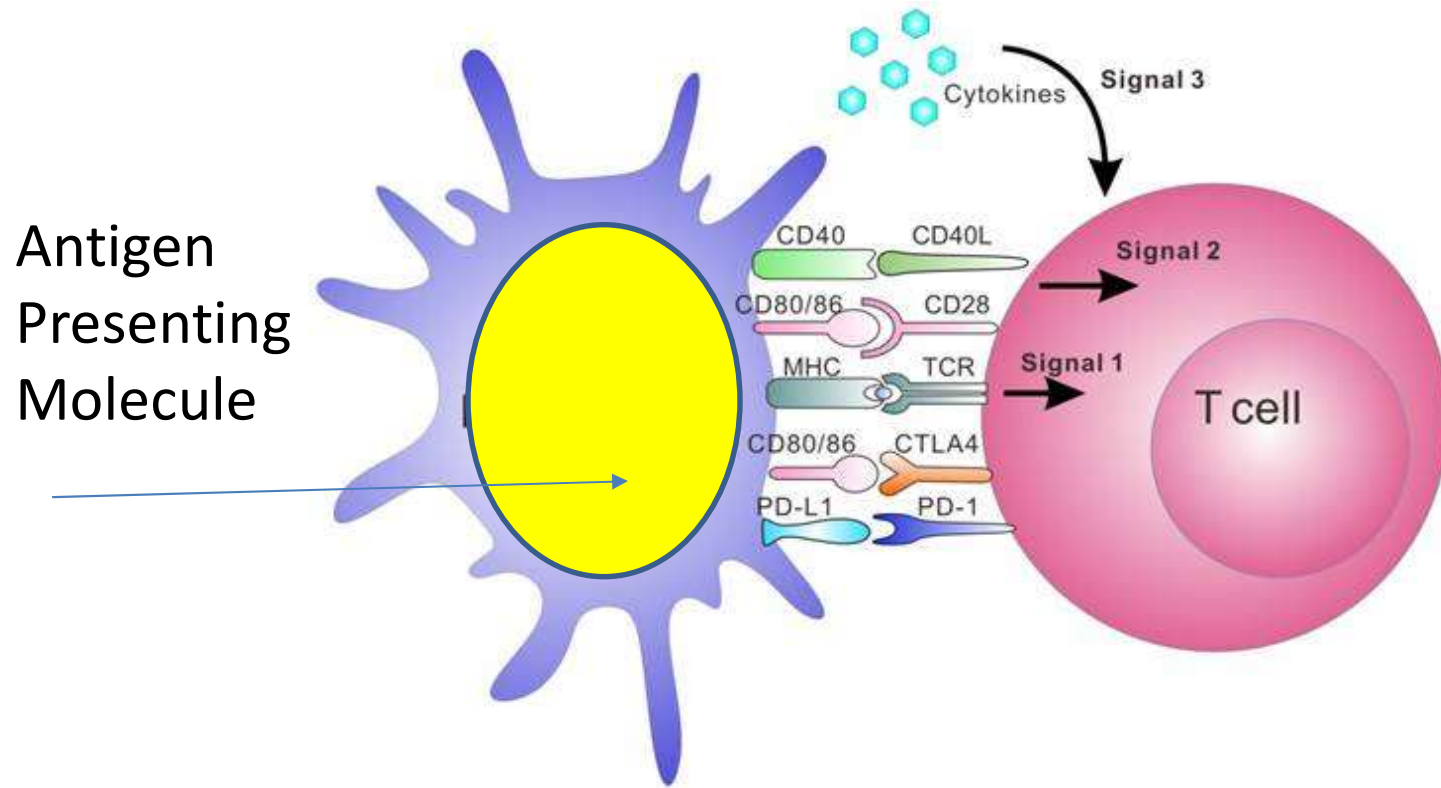


1. Construction of Antigen-Presenting Molecule in the Endoplasmic Reticulum, ER
2. Attachment of ubiquitin molecule (yellow) onto cytoplasmic protein molecule (red), possibly a virus which is then fragmented by proteasome (blue).
3. The protein fragments (red) are inserted into the endoplasmic reticulum and loaded onto the antigen-presenting molecule.



**4. That is  
transported to  
the cell membrane**





**5. Where the antigen-presenting molecule of the antigen-presenting cell (left) activates the T cell (right) initiating the immune response.**



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# Jews in Science

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*All nine individuals grew up in Jewish homes.*

*We have little information about the Jewish influence.*

*Only the two women living in Europe suffered professional anti-Semitism although one reference described Arthur Kornberg and Robert Furchgott as suffering from anti-Semitism*



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# Jews in Science

*All of their parents lived in locations  
across Europe.*

1. Southern Germany (Erlander) and the  
Austro-Hungarian EmpireX2 (G Cori  
and Kornberg)
2. Turin Italy (Levi-Montalcini)
3. Poland (Ciechanover)
4. Russia X3 (Nathans, Berg, Cohen)
5. ? (Furchgott)



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# **Jews in Science**

## **Parents education**

1. The two women came from educated families.
2. None of the others had college educations

## **Family's Affluence**

1. Two women came from affluent families
2. Two came from families with moderate income.
3. Three came from poor families
4. Income level of two is not clear.



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# **Jews in Science**

*Where scientists were born and grew up.*

1. Turin, Prague, Haifa
2. New YorkX3 (two from Brooklyn)
3. Wilmington Delaware
4. Charleston, South Carolina
5. San Francisco, California

*They were all extremely achieving students  
interested in science from a young age.*



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# **Jews in Science**

## ***What can we conclude?***

- 1. Although the two women grew up in affluent homes, they had great work ethics, perhaps because of the educational level of their parents or anti-female prejudice.**
  - 2. Of those born in the US, affluence was not present or important, perhaps actually stimulating a need to achieve.**
  - 3. I see no evidence of anti-Semitism at WU over the last 68 years.**
- My class was 20% Jewish in 1953.**



## ***A Scary Thought***

**Now that Jews are more affluent and anti-Semitism has been reduced, will the attraction to science be reduced?**

**Let us look at the frequency of Jewish Nobel Laureates over the last 100 years.**



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# Jews in Science

## Physics

|  |           |              |  |
|--|-----------|--------------|--|
|  |           | 58           |  |
|  | 1920-2020 | (5.8/decade) |  |
|  | 1990-2000 | 6            |  |
|  | 2000-2010 | 6            |  |
|  | 2010-2020 | 9            |  |
|  |           |              |  |

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# Jews in Science

## Jewish Virtual Library Data

|           |           |               |
|-----------|-----------|---------------|
| Chemistry | 1920-2020 | 30 (3/decade) |
|           | 1990-2000 | 3             |
|           | 2000-2010 | 5             |
|           | 2010-2020 | 5             |
|           |           |               |

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# Jews in Science

## Physiology/Medicine

|  |           |                    |  |
|--|-----------|--------------------|--|
|  | 1920-2020 | 54<br>(5.4/decade) |  |
|  | 1990-2000 | 6                  |  |
|  | 2000-2010 | 6                  |  |
|  | 2010-2020 | 9                  |  |
|  |           |                    |  |



*The percent of Jewish Nobel Laureates  
clearly have not decreased.  
Perhaps they have increased.*

*I have no data to attribute achievement  
to genetics or environment.*

*Suffice it to say that Jews are still the  
people of the book.*

???



**Phil and Sima Needleman**