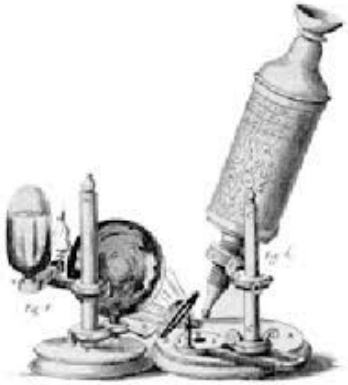
Germ Theory of Disease

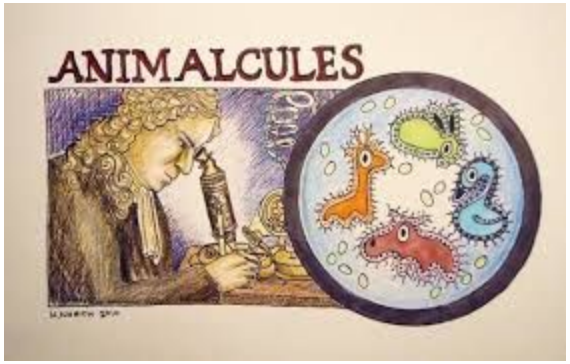
Twelve People That Added to the Theory



Robert Hooke
1635-1703

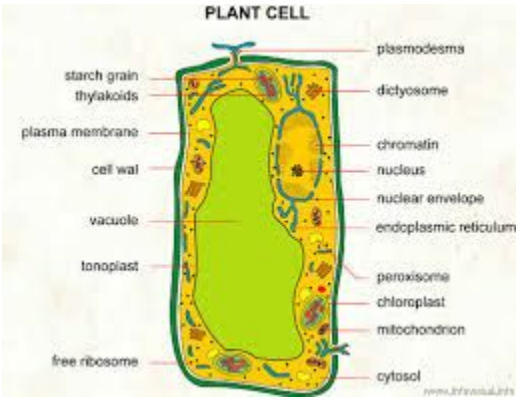
- Believed that good science resulted from making observations
- Wrote a book of his observations called Micrographia (published in 1665)
- Was one of the best microscope makers of the time
- Viewed cork on microscope and saw what looked like little rooms which he called ‘cells’

Anton van Leeuwenhoek
1632-1723



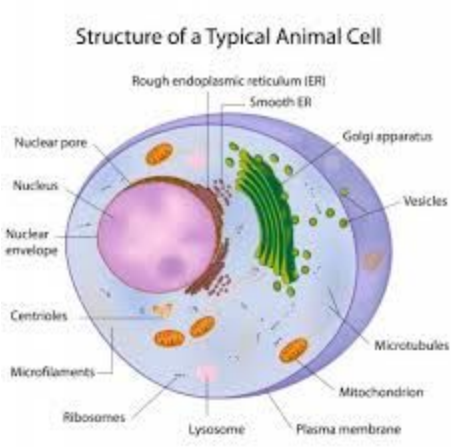
- Skillful microscope builder so able to magnify objects over 200 times
- Looked at drop of water and saw ‘animalcules’
- First person to observe and record microbes

Matthias Jakob Schleiden
1804-1881



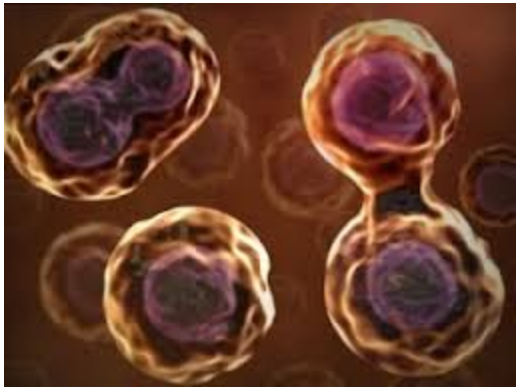
- Professor of Botany that used microscope to study plants
- In 1838 he suggested that ALL plants are made of cells

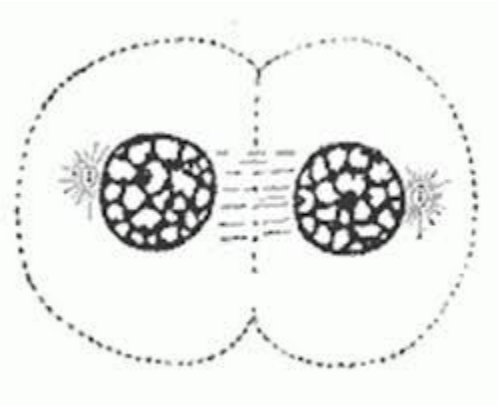
Theodor Schwann
1810-1882



- German biology professor studied animals, particularly the digestive system
- In 1839 he suggested that animals, not just plants, are made of cells

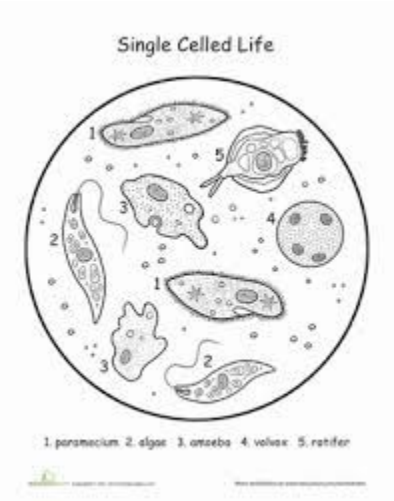
Rudolf Carl Virchow
1821-1902

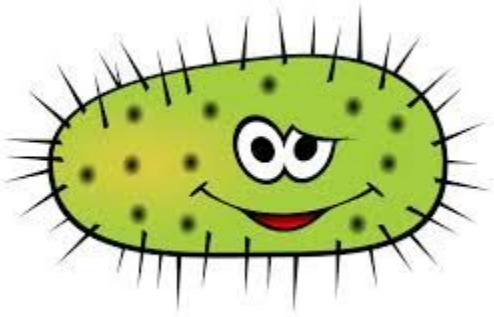




- He was a Polish doctor who had been studying and treating ill patients for years
- In the 1850s he said ‘all cells arise from cells’ meaning cells reproduce to create new cells
- All living organisms begin as a single cell and continue to divide and grow (you are made up of about 10 trillion cells)
- Applied this idea to disease (leukemia), thinking that disease was caused by cells that did not work properly (not entirely correct – infectious diseases are different)

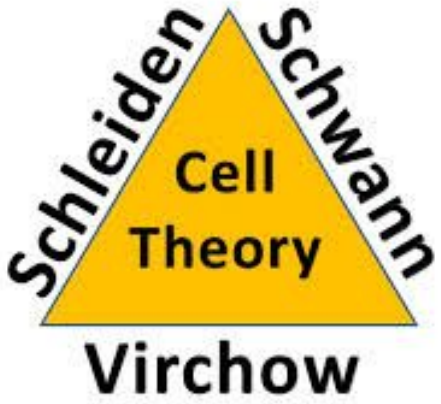
Karl Theodor Ernst von Siebold
1804-1885





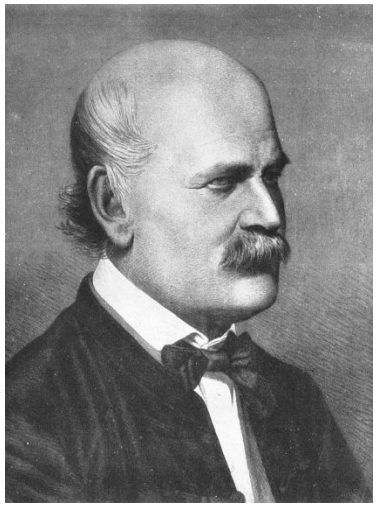
- In 1845 he suggested that microbes were also made up of cells, or more specifically, ONE cell
- He thought that organisms that were made up of many cells (animals) were built out of single-celled microbes (WRONG)

Cell Theory



- Cell theory says that ALL living organisms are made up of cells
- Schleiden, Schwann, and Siebold are credited with developing the cell theory

Ignaz Philipp Semmelweiss 1818-1865

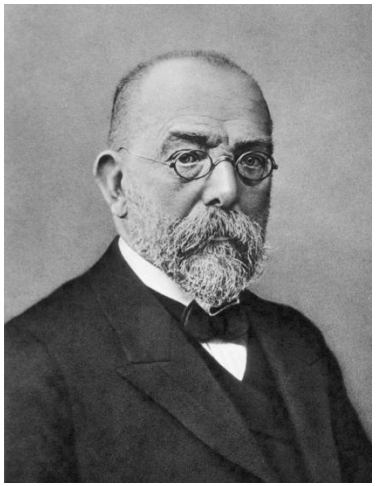


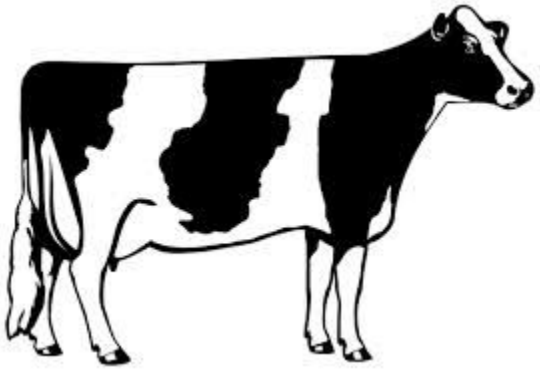
- A Hungarian doctor who was trying to prevent young women from dying from childbed fever in Austria
- Concluded that childbed fever must be infectious and could be spread, carried by doctors from one patient to another
- He felt that hand washing reduces the risk of infectious diseases

Louis Pasteur
1882-1895

- A French chemist who studied microbes in 1854 and noticed certain microbes cause food and drink to spoil but also that heat can kill many of these microbes (pasteurization)
- Also saved the silk industry in France by recommending that a microbe (silkworm) be destroyed
- He suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease)

Robert Koch
1843-1910



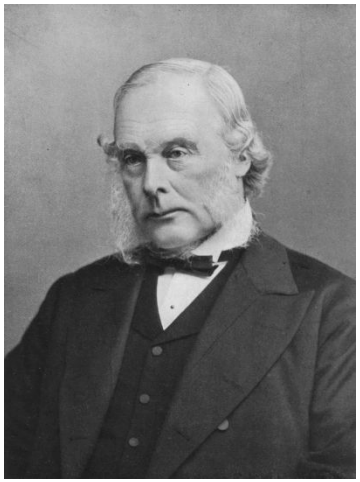


- In 1876 he identified the microbe that caused anthrax, an infectious disease that was killing cows
- He later identified the microbes that caused tuberculosis and cholera
- Developed a way to prove that a specific microbe caused a particular disease
- He also developed agar, a gelatin like substance whish is used to grow microbe cultures in a petri dish

Florence Nightingale
1820-1910

- She as an English nurse that was the first to recognize that cleanliness is important and recommended as part of good nursing
- Improved sanitary practices in military hospitals and led to fewer soldiers dying from infectious diseases

Joseph Lister
1827-1912



- He was a Scottish surgeon who was concerned about the high death rates of patients after surgery
- He came up with the idea of killing germs with chemicals and he began using antiseptic to clean surgical instruments

William Stewart Halsted
1852-1922

- He was an American surgeon that said instead of trying to kill microbes once they are there, why not try to prevent them from being spread in the first place
- Became one of the first surgeons to use rubber gloves during surgery which reduced the presence of microbes and improved patient health

Who Did What?

Let’s now see if you can remember which person did what in relation to the Germ Theory of Disease

Question #1

I came up with the term ‘cell’ after looking at cork under a microscope.

A. William Stewart Halstead
B. Robert Koch
C. Robert Hooke
D. Rudolf Carl Virchow

Incorrect

William Stewart Halstead was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

Correct Answer

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Next Question

Incorrect

Robert Koch developed a way to prove that a specific microbe caused a particular disease.

Correct Answer

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Next Question

Correct

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Next Question

Incorrect

Rudolf Carl Virchow said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

Correct Answer

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Next Question

Question #2

I was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

A. Florence Nightingale
B. Joseph Lister
C. Ignaz Philipp Semmelweiss
D. William Stewart Halstead

Incorrect

Florence Nightingale was the first to recognize that cleanliness is important and recommended as part of good nursing.

Correct Answer

William Stewart Halstead was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

Next Question

Incorrect

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Correct Answer

William Stewart Halstead was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

Next Question

Incorrect

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Correct Answer

William Stewart Halstead was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

Next Question

Correct

William Stewart Halstead was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

Next Question

Question #3

I came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

A. Joseph Lister
B. Louis Pasteur
C. Anton Van Leeuwenhoek
D. Theodor Schwann

Correct

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Next Question

Incorrect

Louis Pasteur suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease).

Correct Answer

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Next Question

Incorrect

Anton Van Leeuwenhoek was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

Correct Answer

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Next Question

Incorrect

Theodor Schwann suggested that animals, not just plants, are made of cells.

Correct Answer

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Next Question

Question #4

I was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

A. Matthias Jakob Schleiden

B. Theodor Schwann

C. Karl Theodor Ernst von Siebold

D. Anton van Leeuwenhoek

Incorrect

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Correct Answer

Anton van Leeuwenhoek was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

Next Question

Incorrect

Theodor Schwann suggested that animals, not just plants, are made of cells.

Correct Answer

Anton van Leeuwenhoek was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

Next Question

Incorrect

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Correct Answer

Anton van Leeuwenhoek was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

Next Question

Correct

Anton van Leeuwenhoek was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

Next Question

Question #5

I suggested that animals, not just plants, are made of cells.

A. Robert Hooke
B. William Stewart Halstead
C. Matthias Jakob Schleiden
D. Theodor Schwann

Incorrect

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Correct Answer

Theodor Schwann suggested that animals, not just plants, are made of cells.

Next Question

Incorrect

William Stewart Halstead was one of the first surgeons to wear gloves during surgery which reduced the presence of microbes and improved patient health.

Correct Answer

Theodor Schwann suggested that animals, not just plants, are made of cells.

Next Question

Incorrect

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Correct Answer

Theodor Schwann suggested that animals, not just plants, are made of cells.

Next Question

Correct

Theodor Schwann suggested that animals, not just plants, are made of cells.

Next Question

Question #6

I suggested that microbes were also made up of cells, or more specifically, ONE cell.

A. Karl Theodor Ernst von Siebold

B. Matthias Jakob Schleiden

C. Theodor Schwann

D. Anton Van Leeuwenhoek

Correct

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Next Question

Incorrect

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Correct Answer

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Next Question

Incorrect

Theodor Schwann suggested that animals, not just plants, are made of cells.

Correct Answer

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Next Question

Incorrect

Anton van Leeuwenhoek was the first person to observe and record microbes after looking at a drop of water and seeing ‘animalcules’.

Correct Answer

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Next Question

Question #7

I was credited with developing the cell theory which says that ALL living organisms are made up of cells.

A. Matthias Jakob Schleiden

B. Theodor Schwann

C. Karl Theodor Ernst von Siebold

D. All of the above

Incorrect

Matthias Jakob Schleiden **WAS** credited with developing cell theory **ALONG WITH** Theodor Schwann and Karl Theodor Ernst von Siebold so the correct answer was **ALL OF THE ABOVE**.

Next Question

Incorrect

Theodor Schwann **WAS** credited with developing cell theory **ALONG WITH** Matthias Jakob Schleiden and Karl Theodor Ernst von Siebold so the correct answer was **ALL OF THE ABOVE**.

Next Question

Incorrect

Karl Theodor Ernst von Siebold **WAS** credited with developing cell theory **ALONG WITH** Matthias Jakob Schleiden and Theodor Schwann so the correct answer was **ALL OF THE ABOVE**.

Next Question

Correct

Schleiden, Schwann, AND Siebold are credited with developing the cell theory which says that ALL living organisms are made up of cells.

Next Question

Question #8

I suggested that ALL plants are made of cells.

A. Robert Koch

B. Rudolf Carl Virchow

C. Ignaz Philipp Semmelweiss

D. Matthias Jakob Schleiden

Incorrect

Robert Koch developed a way to prove that a specific microbe caused a particular disease.

Correct Answer

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Next Question

Incorrect

Rudolf Carl Virchow said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

Correct Answer

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Next Question

Incorrect

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Correct Answer

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Next Question

Correct

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Next Question

Question #9

I was the first to recognize that cleanliness is important and recommended as part of good nursing.

A. Joseph Lister

B. Florence Nightingale

C. Robert Hooke

D. Karl Theodor Ernst von Siebold

Incorrect

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Correct Answer

Florence Nightingale was the first to recognize that cleanliness is important and recommended as part of good nursing.

Next Question

Correct

Florence Nightingale was the first to recognize that cleanliness is important and recommended as part of good nursing.

Next Question

Incorrect

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Correct Answer

Florence Nightingale was the first to recognize that cleanliness is important and recommended as part of good nursing.

Next Question

Incorrect

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Correct Answer

Florence Nightingale was the first to recognize that cleanliness is important and recommended as part of good nursing.

Next Question

Question #10

I said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

A. Matthias Jakob Schleiden

B. Theodor Schwann

C. Rudolf Carl Virchow

D. Karl Theodor Ernst von Siebold

Incorrect

Matthias Jakob Schleiden suggested that ALL plants are made of cells.

Correct Answer

Rudolf Carl Virchow said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

Next Question

Incorrect

Theodor Schwann suggested that animals, not just plants, are made of cells.

Correct Answer

Rudolf Carl Virchow said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

Next Question

Correct

Rudolf Carl Virchow said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

Next Question

Incorrect

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Correct Answer

Rudolf Carl Virchow said ‘all cells arise from cells’ meaning cells reproduce to create new cells.

Next Question

Question #11

Because of my study of childbed fever I felt that hand washing reduces the risk of infectious diseases.

A. Ignaz Philipp Semmelweiss

B. Robert Koch

C. Robert Hooke

D. Karl Theodor Ernst von Siebold

Correct

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Next Question

Incorrect

Robert Koch developed a way to prove that a specific microbe caused a particular disease.

Correct Answer

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Next Question

Incorrect

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Correct Answer

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Next Question

Incorrect

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Correct Answer

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Next Question

Question #12

I suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease).

A. Joseph Lister

B. Louis Pasteur

C. Robert Hooke

D. Karl Theodor Ernst von Siebold

Incorrect

Joseph Lister came up with the idea of killing germs with chemicals and began using antiseptic to clean surgical instruments.

Correct Answer

Louis Pasteur suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease).

Next Question

Correct

Louis Pasteur suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease).

Next Question

Incorrect

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Correct Answer

Louis Pasteur suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease).

Next Question

Incorrect

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Correct Answer

Louis Pasteur suggested that microbes (germs) could cause infectious diseases and were easily spread by people (the basis of the germ theory of disease).

Next Question

Question #13

I developed a way to prove that a specific microbe caused a particular disease when I identified the microbe that caused anthrax and was killing cows as well as the microbes that caused tuberculosis and cholera.

A. Ignaz Philipp Semmelweiss

B. Robert Koch

C. Robert Hooke

D. Karl Theodor Ernst von Siebold

Incorrect

Ignaz Philipp Semmelweiss felt that hand washing reduces the risk of infectious diseases.

Correct Answer

Robert Koch developed a way to prove that a specific microbe caused a particular disease.

Next Slide

Correct

Robert Koch developed a way to prove that a specific microbe caused a particular disease when I identified the microbe that caused anthrax and was killing cows as well as the microbes that caused tuberculosis and cholera.

Next Slide

Incorrect

Robert Hooke came up with the term ‘cell’ after looking at cork under a microscope.

Correct Answer

Robert Koch developed a way to prove that a specific microbe caused a particular disease.

Next Slide

Incorrect

Karl Theodor Ernst von Siebold suggested that microbes were also made up of cells, or more specifically, ONE cell.

Correct Answer

Robert Koch developed a way to prove that a specific microbe caused a particular disease.

Next Slide

Summary

Person	Contribution to Germ Theory
Robert Hooke	Coined the term cell from looking at cork
Anton van Leeuwenhoek	Described microbes for first time
Matthias Jakob Schleiden	Said that ALL plants are made of cells
Theodor Schwann	Said that ALL animals are made of cells
Karl Theodor Ernst von Siebold	Said that there are single celled microbes
Rudolf Carl Virchow	Cells arise from cells or reproduce
Ignaz Philipp Semmelweiss	Hand washing reduces the spread of infectious diseases
Louis Pasteur	A specific germ causes a specific disease and by spreading germs you spread disease (Germ Theory)
Robert Koch	A specific microbe causes a particular disease
Florence Nightingale	Cleanliness is important in patient care
Joseph Lister	Microbes (germs) can be killed with chemicals
William Stewart Halsted	Used gloves in surgery to reduce the spread of microbes

Good Luck on the Test!