

Technical Advances in obtaining pure cultures of bacteria rapidly followed. Koch's work with anthrax he observed unrefrigerated boiled potato developed various spots of various colours. Microscopic obs. of materials from these spots - revealed presence of bacteria - one spot known as rods, - of spherical cells (coccus) and third contained yeast cells and separation of contaminants from surface permitted the gr. of a single cell into a colony of many progeny cells.

From these observations, Koch dev. tech. that enabled microbes hunters to grow pure cultures of microbes.

Koch used gelatin as a solidifying agent to create a firm surface on which to streak microbes. Gelatin was effective at room temp., but liquefied at temp. above 30°C. Dr. Walter Hesse & his wife Fanny introduced agar, which Fanny had previously used as a solidifying agent to harden jelly. Agar is ex. from sea weeds, specifically red algae. (grow in warm coastal water); it is an ideal solidifying agent for microbiology media because after solidifying agent for ~~media~~ at 44°C, it remains solid even above 70°C.

Many of the bacterial agents that cause infectious human diseases were discovered between 1877 and 1898. Pure culture technique led to a major breakthrough in this imp. medical era.

Anthrax	-	<u>Bacillus anthracis</u>	R. Koch	1877
Gonorrhoea	-	<u>Neisseria gonorrhoeae</u>	Albert Neisser	1879
Pyogenic inf.	-	<u>Staphylococcus aureus</u>	Alexander Ogston	1881
Tuberculosis	-	<u>Mycobacterium tuberculosis</u>	R. Koch	1882
Erysipelas	-	<u>S. pyogenes</u>	Friedrich Fehleisen	1882
Diphtheria	-	<u>Corynebacterium diphtheriae</u>	Theodor Klebs	1883
Tetanus	-	<u>Clostridium tetani</u>	Arthur Nicolaier	1884
Cholera	-	<u>V. cholerae</u>	R. Koch	1884

(19)

Typhoid	- <u>Salmonella typhi</u>	- Georg Gaffky	1884
Brucellosis	- <u>Brucella melitensis</u>	David Bruce	1887
Gastroenteritis	<u>Salmonella enteritidis</u>	August Gaetner	1888
Gas Gangrene	<u>Clostridium perfringens</u>	William Welch	1892
Bubonic plague	<u>Yersinia pestis</u>	Alexandre Yersin	1894
Botulism	<u>Clostridium botulinum</u>	Emile van Ermengem	1897
Dysentery	<u>Shigella dysenteriae</u>	Kiyoshi Shiga	1898

Robert Koch also theorized that a colony arose from a single cell and developed streaking methods using a platinum loop which enabled him to isolate organisms in pure culture.

Assistant of Koch's laboratory R. J. Petri in 1887 developed the dish (or plate) - which is named in his honour, that is still used to culture ^{the bacteria} _{been}. Design remained unchanged ex. glass has ^{been} replaced with plastic.

Paul Ehrlich :- Another coworker of Koch's lab. and made far reaching discoveries in immunology and chemotherapy. He suggested the staining technique of bacteria in tissues - where he found bacterial cells absorb selected dyes to a greater extent than surrounding tissue. He further hypothesized that a toxic dye might destroy the bacterium without significant damage to the host tissue. He suggested organic arsenicals might be synthesized which would be harmless to animals but toxic to invading parasite.