

# Fanny Hesse

*Soups, jellies, desserts, and...  
...agar plates?*



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**A**ngelina Fanny Hesse was born in New York City in 1850 and was the oldest of ten children. Hesse was taught housekeeping and cooking along with her sisters and at 15, she moved to Switzerland to study home economics and French. Despite having no scientific background, Hesse would later work unpaid as a scientific illustrator and assistant to her husband, Walther Hesse, in Robert Koch's laboratory in Berlin.(1) Hesse's intricate illustrations showed a clear understanding of microscopy and bacteriology.(4)



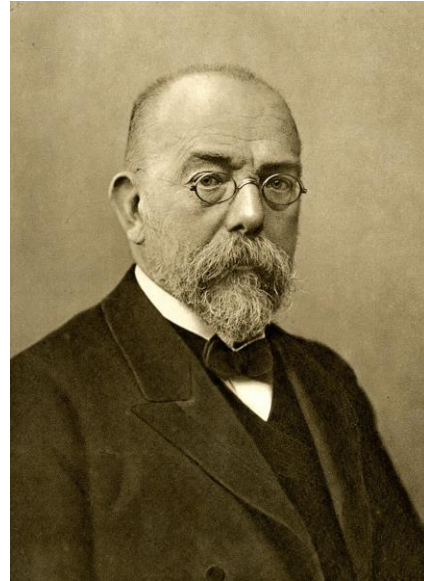
**Figure 1: Fanny Hesse and Walther Hesse.**

Before Hesse, isolating bacterial cells was incredibly difficult, making classification close to impossible. Slices of potato and gelatin were used to grow bacteria but these methods were less than ideal. Potato slices failed to produce sufficient results and incubation temperatures caused the gelatin to melt.(4) Hesse, having learned cooking tips from a Dutch neighbor who spent time in Indonesia, suggested agar.(2) Derived from red algae, she often used it in desserts and jellies thanks to its ability to withstand warm temperatures in the summer.(1)



**Figure 2:** *Gracilaria*, a red algae traditionally used to produce agar.

After testing Hesse's suggestion, Robert Koch and Walther Hesse were finally able to cultivate the bacteria that causes tuberculosis in 1882.(1) Using an agar based medium, colonies could then be easily isolated for further study. Unlike gelatin, the thermal stability of agar allowed for proper isolation of pure cultures. The agar was also resistant to degradation by bacteria.(3) Replacing gelatin with agar proved to be an invaluable substitute, as agar is still used extensively over 100 years later.



**Figure 3:** Robert Koch's lab in Berlin was the first to utilize agar and Petri dishes in the late 1800s.

Despite Hesse's contribution, she was never properly credited and there was no mention of her in Koch's scientific papers. She also made no effort to commercialize the use of agar as she felt that was improper.(1) In 1983, several researchers recommended that plain agar be renamed to "Frau Hesse's Medium" to recognize Fanny's discovery, which all microbiologists still utilize to this day.(3)



**Figure 4:** Hardy Diagnostics manufactures about 300 different formulas of culture media in a variety of containers under the brand name **CRITERION**.

## References:

1. [https://en.wikipedia.org/wiki/Fanny\\_Hesse](https://en.wikipedia.org/wiki/Fanny_Hesse)
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3. <https://www.popsoci.com/blog-network/ladybits/forgotten-woman-who-made-microbiology-possible/>
4. <https://www.teknova.com/angelina-hesse-agar/>