

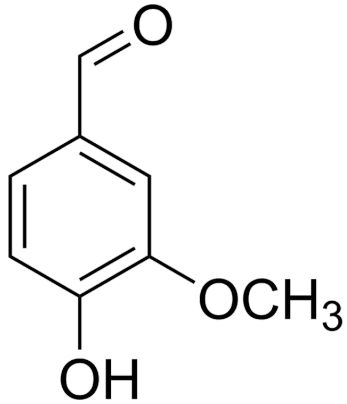
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# Biosynthesis of vanillin in brewer's yeast



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## What we will do...

Produce vanillin using *saccharomyces cerevisiae*.

Use glycerol as an energy source.

Couple vanillin production to growth with gene deletion.

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## Why we will do this...

Vanilla is one of the most widely used flavors in the world.

Vanilla is the most expensive flavor.

Vanillin is also used in perfumes and pharmaceuticals.

Natural vanillin consumption from orchids is < 1% of total production.

Main production comes from paper industry using lignin.

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# How we do it

Simulate genetic mutation with computer model.

Add and remove genes in model to maximize output.

Use the model to compute theoretical yield.

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# Heimildir

<http://cen.acs.org/articles/94/i36/problem-vanilla.html>

<http://sitn.hms.harvard.edu/flash/2015/the-flavor-rundown-natural-vs-artificial-flavors/>

[https://en.wikipedia.org/wiki/Saccharomyces\\_cerevisiae#/media/File:Saccharomyces\\_cerevisiae\\_SEM.jpg](https://en.wikipedia.org/wiki/Saccharomyces_cerevisiae#/media/File:Saccharomyces_cerevisiae_SEM.jpg)

[http://www.faqs.org/photo-dict/photofiles/list/591/986vanilla\\_beans.jpg](http://www.faqs.org/photo-dict/photofiles/list/591/986vanilla_beans.jpg)

<https://repositorio-aberto.up.pt/bitstream/10216/11944/2/Texto%20integral.pdf>

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