

## "Reduction of Feedback Inhibition in Homoserine Kinase (ThrB) enhances the L-Threonine Biosynthesis"



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Science 2, room 109

For further information: [www.csufresno.edu/biology](http://www.csufresno.edu/biology)

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L-threonine is a limiting amino acid in livestock diets. Currently, L-threonine is produced by *E. coli*, which makes the purification of L-threonine difficult because it produces endotoxins. Thus, we seek to overproduce L-threonine by using *Corynebacterium glutamicum*, a GRAS (generally regarded as safe) microorganism. Among the five enzymes involved in the synthesis of L-threonine in *C. glutamicum*, LysC, Hom, and ThrB are feedback inhibited by L-threonine. It has been unsuccessful to remove the feedback inhibition in ThrB because L-threonine inhibits the enzyme by competing with L-homoserine (substrate) for the same active site. To genetically separate the catalytic activity and the feedback inhibition in ThrB, we mutated a residue at the gate of the active site. Enzyme kinetics study shows that one specific mutation increased  $K_i$  for L-Threonine without disrupting enzymatic activity. Furthermore, expression of this mutant ThrB in *E. coli* increased approximately 20% of L-threonine production.

**Bio:** Choong-Min Kang has been an Associate professor at CSU Stanislaus since 2015. He earned a PhD in Microbiology at UC Davis, and was a postdoctoral fellow at Fukuyama University in Japan and Harvard Medical School in Boston.