

**About our guest**

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**SPEAKING OF
MOL BIO**

Directed evolution— a PETase project

Season 2, Episode 6

Episode notes

Plastics are a modern miracle of science that have helped deliver both convenience and life-saving solutions. However, we must now grapple with the challenge of immense amounts of plastics in our waste streams and environment. How do we best deconstruct plastics to reusable or more bio-friendly molecules? This is the exact challenge being addressed by the work of Dr. Elizabeth (Izzy) Bell and her team at the National Renewable Energy Lab.

Our conversation with Izzy showcases her ability to summarize complex topics very concisely and understandably, which she says is a skill that is critically important in her field because it's so interdisciplinary. Izzy summarizes the challenges they're working to address and then walks us through the stepwise processes she and her team use to conduct directed evolution studies. These studies aim to create and characterize enzymes capable of deconstructing common plastics, first at a laboratory scale, but eventually at an industrial scale. If you've ever wondered about how directed evolution studies are done, and the role that molecular biology plays with them, this conversation will be sure to clarify.

Izzy's recent publications

1. Bell, E.L., Smithson, R., Kilbride, S. et al. [Directed evolution of an efficient and thermostable PET depolymerase](#). *Nat Catal* 5, 673–681 (2022).
2. E. Radley, J. Davidson, J. Foster, R. Obexer, E. L. Bell, A. P. Green, [Engineering Enzymes for Environmental Sustainability Angew](#). *Chem. Int. Ed.* 2023, 62, e202309305.

“... One of the beauties of this area is that it is all cutting edge, which means that you're unlikely to already have all the skills that you need to excel. Which in a funny way means that you can apply to any of these different areas or projects because no one else is going to have exactly the right skills either. So you've just got to be able to show that you're willing to learn”

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