



Learning how to make designer PCR primers in introductory molecular biology labs.

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Abstract

Polymerase chain reaction (PCR) is one of the top techniques we teach our cell and molecular biology undergraduates, and it is no surprise that it is often amongst the top techniques that our students express desire to master during their undergraduate training. Here, we demonstrate a Course-based Undergraduate Research Experience (CURE) approach to teaching PCR to our upper year introductory molecular biology laboratory course. In this activity, students take a scaffolded approach to designing specific primers to amplify a promoter region in their plasmids, and evaluate the suitability of their primers (e.g. GC content; melting point; likelihood of hairpins and primer dimers). This is a written assignment wherein students compete for the honour of having their PCR primers ordered for the lab, and it precedes the actual PCR experiment. Thus, this exercise provides the opportunity for students to do the planning and design that lies behind their hands-on PCR experiment.

Keywords: PCR, molecular biology, CURE

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