351c Magnetic Cell Separation: Bioprocess, Biomedical, or Biochemical Engineering? It's All Chemical Engineering to Me! (Area 15c Plenary Lecture)

Jeffrey Chalmers

A recent computer search of the biological literature (Medline) indicated over 400 articles in the last 5 years, referencing magnetic cell separations as at least a part of the experimental protocols. A few examples, which demonstrate the range in the reported types of cells separated, include: the separation of CD34+ peripheral blood stem cells (PBSC) , the separation of rare, circulating cancer cells from patients, the separation of fetal cells from peripheral maternal blood, the separation of glial cells from central nervous tissue, and the separation of microorganisms from foods.

This large range of applications, as well as the fundamental physics behind the process makes this research area a great example classical cross-disciplinary work. It also has lead to assuming attempts by others to label this research as Bio"X" engineering. In this talk I wish to highlight the significant number of "classical" Chemical Engineering principles we have used in conducting this research.