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Development of a production and purification platform for virus like particles (VLP) vaccine candidates: A case study

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Virus like particles (VLP) vaccine candidates have received increased attention following their success with vaccines like for HPV and HBV. Whilst clinical candidates have proven efficacy and protection, their large scale production implies high titer production, high recovery and purity leading to constant process improvement to meet market demand. In this study, a Hepatitis C Virus VLP based vaccine candidate production and purification was evaluated in collaboration with Insituto de Biologia Experimental e Tecnologica (IBET), Portugal. The VLP vaccine candidate was produced in insect cell expression system in a disposable bioreactor technology and cell culture attributes were compared with those from glass stirred tank bioreactor culture. Both systems harvests were subsequently purified to assess the impact of upstream processing on the downstream and the product quality. The downstream train was improved through the selection of appropriate anion exchange resin to reach 70% recovery and a satisfactory Baculovirus log reduction. In addition, appropriate depth filtration and ultra filtration technologies were assessed and selected. Altogether, this case study laid the foundation for a fully GMP production process that can easily pilot transferred and implemented for clinical and subsequent commercial production of VLP vaccine candidates.

Biography

Anissa Boumlic-Courtade joined Millipore in 2009, which became Merck life Science division after its acquisition in 2011. She has held different Bioprocessing Technical and Technology Management positions then she was appointed to lead the vaccine initiative in Europe for the Life Science Process Solutions division. Her role is to initiate holistic development of vaccines processing technologies, provide process consulting and drive high level sales projects. She holds an MSc degree in Biotechnology Engineering from the ESBS, Strasbourg, France and PhDs in Molecular Biology & Biochemistry from the University of Strasbourg co-directed with the University of Thessaly, Greece and she has published articles as first author in the field of hepatitis C virus research.

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