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Quality control of mammalian cells and bacteria during ATMP production using white light spectroscopy**Annie Frelet-Barrand***University Bourgogne Franche-Comté, France*

Advanced Therapy Medicinal Products (ATMPs) represent nowadays promising therapeutic solutions for patients suffering from severe to life-threatening diseases. The relatively high cost of these curative products (few hundred thousand dollars per dose) is due to various factors during production: media, sterile facilities, trained staff, onerous equipments, samplings for quality controls; the latter increase contamination risks.

One way is to develop innovative techniques for online controls including concentration measurements of different species and quality assessments. Meanwhile, real time detection of possible contaminations would allow stopping production as soon as a problem arises, hence reducing cost of global production.

Here, we present simple and real time white light spectroscopy means to simultaneously monitor mammalian cell growth, estimate quality and detect contaminations. Mathematical descriptions of absorption spectra shapes of both mammalian and bacteria allowed to determine concentrations of both species and to produce a warning signal in case of problems/perturbations including contaminations [1,2,3]. The contactless nature of white light spectroscopy avoids sampling bioreactor's content which consequently reduces risks of concomitant contaminations. Such online methods could be integrated within bioreactors to help cellular engineering but also to finally democratize ATMPs delivery to as many people as possible.

Biography

Dr. Annie FRELET-BARRAND studied biochemistry at the University of Franche-Comté (France) and was graduated as MS in 1998. In 2006, she received her PhD degree on membrane protein (MP) characterization at the Institute of Plant Biology, Zurich. During her postdoctoral fellowship (CEA Grenoble, France), she developed *L. lactis* system for functional characterization of MPs. In 2009, she became CNRS Researcher at CEA Saclay, studying MPs involved in liver detoxification. In 2015, she joined the Institute FEMTO-ST and is now developing different and innovative ways to engineer and characterize diverse biological elements from proteins to mammalian cells using biological, biochemical and biophysical methods. She published 22 research articles and 4 book chapters (h=16).