The successful development and regulatory approval of originator and biosimilar therapeutic proteins requires a system approach to upstream and downstream processing as well as product characterization and quality control. Innovation in process design and control, product characterization strategies, and data integration represent an ecosystem whose concerted advancement may reduce time-to-market and further improve comparability and biosimilarity programs. The NISTmAb, an IgG1k antibody generated against Respiratory Syncytial Virus (RSV), serves as a representative therapeutic molecule for technology development with respect to production, purification, and analytical characterization of the product. Three, non-originator cell lines expressing the NISTmAb were constructed to enable the development of downstream and upstream processes. The products of the three cell lines and their similarities and differences from the NISTmAb will be presented.