

Bibliography

- [1] United States Centers for Disease Control and Prevention. *Seasonal Influenza Vaccine & Total Doses Distributed*. <http://www.cdc.gov/flu/professionals/vaccination/vaccinesupply.htm>. Accessed Feb. 22, 2014.
- [2] Kresse, Hedwig. *Influenza Vaccine Market Dynamics*. *Nature Reviews: Drug Discovery*. 8 (2009): 841-842. Accessed Feb.23, 2014.
- [3] *2007-2008 Influenza Vaccine Production and Distribution Market Brief*. Health Industry Distributors Association. http://www.preventinfluenza.org/HIDA_flubrief07-08.pdf. Accessed Feb. 22, 2014.
- [4] *Cell-Culture Process for Influenza Vaccine Production*. Novartis. https://www.novartisvaccines.com/downloads/flucelvax/Cell-Culture_Technology_Fact_Sheet.pdf. Accessed Feb. 21, 2014.
- [5] Kang, Sang-Moo. *Influenza Vaccines Based on Virus-like Particles*. *Virus Research*. 143. (2009): 140-146. Accessed Feb. 23, 2014
- [6] Jayapal, Karthik, Katie F. Wlaschin, Wei-Shou Hu, and Miranda G.S. Yap. *Recombinant Protein Therapeutics from CHO Cells – 20 Years and Counting*. SBE Special Section CHO Consortium: 40-47. http://pef.aibn.uq.edu.au/wordpress/wpcontent/blogs.dir/1/files/Support/Mammalian/Literature/Recombinant_Protein_Therapeutics_from_CHO_Cells20_years_and_counting_Jayapal.pdf. Accessed Feb. 23, 2014.
- [7] *Influenza Vaccine Manufacturing in Insect Cells*. Novavax. Sept. 18, 2007. Accessed March 10, 2014.
- [8] Cox, Manon. *Recombinant Protein Vaccines Produced in Insect Cells*. Protein Sciences Corp. Jan. 25, 2013. Accessed Feb. 23, 2014.
- [9] Amen Haitham. *Baculovirus and Insect Cell Expression*. http://www.academia.edu/1436672/Baculovirus_and_Insect_Cell_Expression. Accessed Feb. 26, 2014.
- [10] *Growth and Maintenance of Insect Cell Lines*. Invitrogen Corporation. http://tools.invitrogen.com/content/sfs/manuals/insect_man.pdf. Accessed Feb. 22, 2014.
- [11] Rappuoli. *Cell-Culture-Based Vaccine Production: Technological Options*. *The Bridge: Linking Engineering and Society* (Fall 2006): 25-30. Accessed March 6, 2014.
- [12] *Annex 3: Recommendations for the Production and Control of Influenza Vaccine (Inactivated)*. World Health Organization. WHO Technical Report Series. 927. (2005). Accessed Feb. 22, 2014.

- [13] Shukla, Etzel, Gadam. *Process Scale Bioseparations for the Biopharmaceutical Industry*. CRC: Taylor & Francis Group, LLC. 2007. Accessed March 2, 2014.
- [14] Anastas, Zimmerman. *Through the 12 Principles of Green Engineering*. American Chemical Society: Environmental Science and Technology (March 2003): 95A-101A. Accessed March 23, 2014.
- [15] *CELLECT Serum-Free Insect Virus Production Medium*. http://www.mpbio.com/detailed_info.php?family_key=0911273. Accessed March 3, 2014.
- [16] Vlak, Gooijer, Tramper, Miltenburger. *Insect Cell Cultures: Fundamental and Applied Aspects*. Current Applications of Cell Culture Engineering. 2. (2002). Accessed March 3, 2014.
- [17] Meghrou, Mahmoud, Jacob, Chubet, Cox, Kamen. *Development of a Simple and High-Yielding Fed-Batch Process for the Production of Influenza Vaccines*. Vaccine. 28. (2010): 309-316. Accessed March 6, 2014.
- [18] Cox, Manon. *Flublock®: Recombinant Influenza Vaccine*. Protein Science Corporation. ECI Conferences International: Vaccine Technology IV May 20-25, 2012 Portugal. Accessed Feb. 22, 2014.
- [19] Levine, Howard L. *Vaccine Manufacturing Facilities of the Future*. BPTC. BioProcess Technology Consultants. Dec. 1, 2010. <http://www.bptc.com/presentation/vaccine-manufacturing-facilities-future>. Accessed Feb. 22, 2014.
- [20] Novais, Titchener-Hooker, Hoare. *Economic Comparison Between Conventional and Disposables-Based Technology for the Production of Biopharmaceuticals*. Biotechnology and Bioengineering. 75.2 (2001): 143-153. Accessed Feb. 24, 2014.
- [21] Nelson, Kim L. *Approaches for Flexible Manufacturing Facilities in Vaccine Production*. BioPharm International. Nov. 2, 2011. Accessed Feb. 22, 2014.
- [22] Lakshmikanthan, Jayant. *Outsourcing: Biologics Manufacturing: The CMO Advantage*. BioPharm International. Feb. 1, 2007. Accessed Feb. 24, 2014.
- [23] Levine, Jeff. *National Influenza Vaccine Summit*. The GlaxoSmithKline Group of Companies. 2013. Accessed Feb. 21, 2014.
- [24] Cox, Manon. *Development of an Influenza Virus Vaccine Using the Baculovirus-Insect Cell Expression System: Implications for Pandemic Preparedness*. 2009. Accessed March 10, 2014.
- [25] Kalbfuss, Wolff, Morenweiser, Reichl. *Purification of Cell Culture-Derived Human Influenza A Virus by Size-Exclusion and Anion-Exchange Chromatography*. Biotechnology and Bioengineering. 96 (Apr. 2007): 932-944. Accessed March 10, 2014.

- [26] Wolff, Reichl. *Review: Downstream Processing: From Egg to Cell Culture-Derived Influenza Virus Particles*. Chemical Engineering Technology. 31 (2009): 846-857. Accessed March 10, 2014.
- [27] *Purification of Influenza A/H1N1 Using CaptoCore 700*. GE Healthcare Life Sciences. Application Note 29-0003-34 AA. 2012. Accessed March 13, 2014.
- [28] Kalbfuss, Genzel, Wolff, Zimmermann, Morenweiser, Reichl. *Harvesting and Concentration of Human Influenza A Virus Produced in Serum-Free Mammalian Cell Culture for the Production of Vaccines*. Biotechnology and Bioengineering. 97 (May 2007): 73-85. Accessed March 13, 2014.
- [29] Amorij, Meulenaar, Hinrichs, Stegmann, Huckriede, Coenen, Frijlink. *Rational Design of an Influenza Subunit Vaccine Powder with Sugar Glass Technology: Preventing Conformational Changes of Haemagglutinin during Freezing and Freeze-Drying*. Vaccine 25 (2007): 6447-6457. Accessed March 18, 2014.
- [30] Geeraedts, Saluja, Veer, Amorji, Frijlink, Wilschut, Hinrichs, Huckriede. *Preservation of the Immunogenicity of Dry-Powder Influenza H5N1 Whole Inactivated Virus Vaccine at Elevated Storage Temperatures*. The AAPS Journal 12 (June 2010): 215-222. Accessed March 18, 2014.
- [31] Harvey, Douglas. *Biochemical Engineering*. CRC: Taylor & Francis. 1997. Accessed March 3, 2014.
- [32] Hahn, Courbron, Hamer, Masoud, et al. *Rapid Manufacture and Release of a GMP Batch of Avian Influenza A (H7N9) Virus-Like Particle Vaccine Made Using Recombinant Baculovirus-Sf9 Insect Cell Culture Technology*. BioProcessing Journal: Trends & Developments in BioProcessing Technology 12 (Sept. 2013): 1-10. Accessed March 9, 2014.
- [33] *Capto Core 700: Instructions*. GE Healthcare Life Sciences. Instructions 28-9958-80 AC. Accessed March 18, 2014.
- [34] Kurt Forge. GE Healthcare-Life Sciences. Bioprocess Sales Specialist. Private communication on March 21, 2014.
- [35] Blair McPhail. Enpro. Inc. Sales Engineer. Shayne A. Schmeackle. Enpro. Inc. Professional Engineering. Private Communication on March 21, 2014.
- [36] Levine, Howard L. *Vaccine Manufacturing in the Coming Decade*. BPTC BioProcess Technology Consultants. World Vaccines Manufacturing Congress 2011. Accessed March 24, 2014.

- [37] *Occupational Safety and Health Guideline for beta-Propiolactone: Potential Human Carcinogen*. U.S. Department of Health and Human Services. 1988. Accessed March 24, 2014.
- [38] *Material Safety Data Sheet: Formalin PCP 6998*. United Agri Products Canada, Inc. 2011. Accessed March 24, 2014.
- [39] *Safety Data Sheet: Benzonase Nuclease*. Sigma-Aldrich. 2014. Accessed March 24, 2014.
- [40] *Biopharmaceutical Products and Technologies*. The Pall Corporation. <http://www.pall.com/main/biopharmaceuticals/biopharmaceuticals-bdb09025.page>. Accessed March 20, 2014.
- [41] *GE Healthcare and Life Sciences*. GE Healthcare and Life Sciences. <http://www.gelifesciences.com/webapp/wcs/stores/servlet/Home/en/GELifeSciences-us/>. Accessed March 20, 2014.
- [42] *Cole-Parmer-Your Technical Experts in Fluid Handling, Electrochemistry, and Laboratory Equipment*. Cole-Parmer. <http://www.coleparmer.com/>. Accessed March 20, 2014.
- [43] *Bioprocess Solutions*. Sartorius. <http://www.sartorius.us/us/bioprocess-solutions/>. Accessed March 20, 2014.
- [44] *Indicative Chemical Prices A-Z*. ICIS. <http://www.icis.com/chemicals/channel-info-chemicals-a-z/>. Accessed March 20, 2014.
- [45] *Cells and Microorganisms*. ATCC: The Essentials of Life Science Research Globally Delivered. http://www.atcc.org/en/Products/Cells_and_Microorganisms.aspx. Accessed March 20, 2014.
- [46] *EX-CELL 420 Serum-Free Medium for Insect Cells*. Sigma Aldrich. <http://www.sigmaaldrich.com/catalog/product/sigma/24420c?lang=en®ion=US>. March 20, 2014.
- [47] Excel Water Technologies, Inc. <http://www.excelwater.com/eng/b2c/detailproduct.php?iID=709&Category=17>. Accessed March 20, 2014.
- [48] *Sodium Hydroxide Pellets ACS/USP/NF/FCC Grade*. Pci-Scientific. <http://www.pciscientific.com/sohypeacgr.html>. Accessed March 20, 2014.
- [49] *Medical Grade Inulin*. <http://www.alibaba.com/showroom/inulin.html>. Accessed March 20, 2014.
- [50] *CDC Vaccine Price List: Flulaval Trivalent*. Centers for Disease Control and Prevention. Accessed February 24, 2014.

- [51] *Flulaval (Influenza Virus Vaccine): 2013-2014 Formula*. U.S. Food and Drug Administration. <http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm112904.pdf>. Accessed March 24, 2014.
- [52] Peters, Timmerhaus, West. *Plant Design and Economics for Chemical Engineers*. 5th Ed. McGraw-Hill. 2003. Accessed March 22, 2014.
- [53] *Safety Data Sheet: EX-CELL 420 Serum-Free Medium for Insect Cells*. Sigma-Aldrich. <http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=24420C&brand=SIGMA&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsigma%2F24420c%3Flang%3Den>. Accessed March 24, 2014.
- [54] *MSDS: Sodium Bicarbonate*. Science Lab.com. <http://www.sciencelab.com/msds.php?msdsId=9927258>. Accessed March 24, 2014.
- [55] *MSDS: Hydrochloric Acid*. Science Lab.com. <http://www.sciencelab.com/msds.php?msdsId=9924285>. Accessed March 24, 2014.
- [56] *MSDS: Isopropanol*. Science Lab.com. <http://www.sciencelab.com/msds.php?msdsId=9924412>. Accessed March 24, 2014.
- [57] *MSDS: Sodium Phosphate Dibasic*. Science Lab.com. <http://www.sciencelab.com/msds.php?msdsId=9925023>. Accessed March 24, 2014.
- [58] *MSDS: Sodium Phosphate Monobasic*. Science Lab.com. <http://www.sciencelab.com/msds.php?msdsId=9925021>. Accessed March 24, 2014.
- [59] *MSDS: Sodium Hydroxide*. Science Lab.com. <http://www.sciencelab.com/msds.php?msdsId=9924998>. Accessed March 24, 2014.