

Supplement (Harcum et al., 2022)

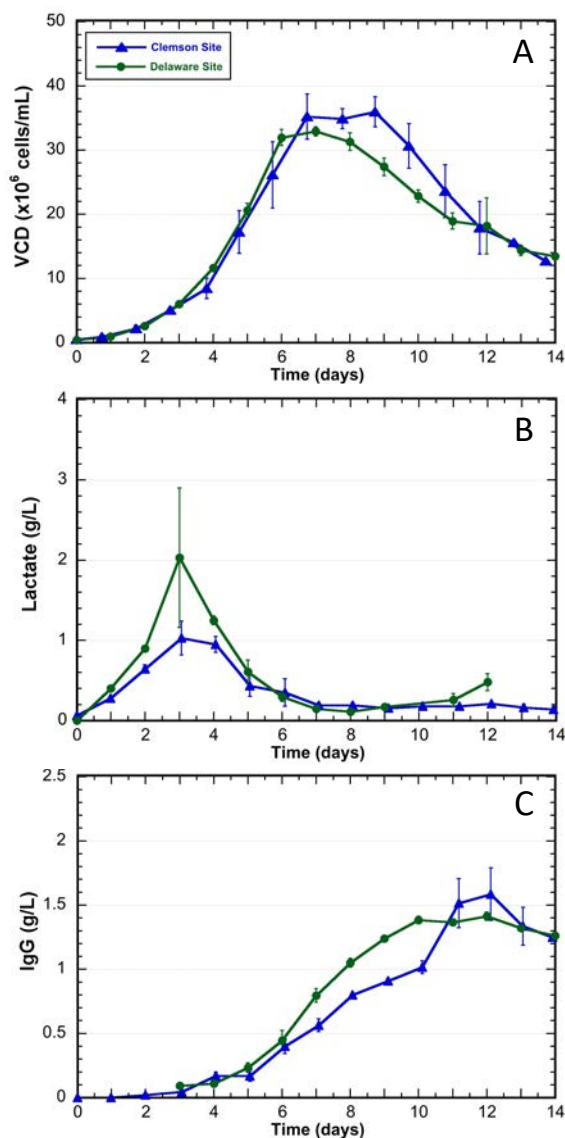


Fig. S1 Growth, lactate, and titers for CHO VRC01 cultures conducted at two sites using the same PID settings, which correspond to the second tuning's initial PID settings in ambr250 bioreactors A) Viable cell density (VCD); B) Lactate; and C) IgG (titer). CHO VRC01 cultures with identical media and feeding schemes as described in the Materials and Method section. Clemson University (blue triangles, N = 2) and the University of Delaware (green circles, N = 2). Error bars represent one standard deviation.

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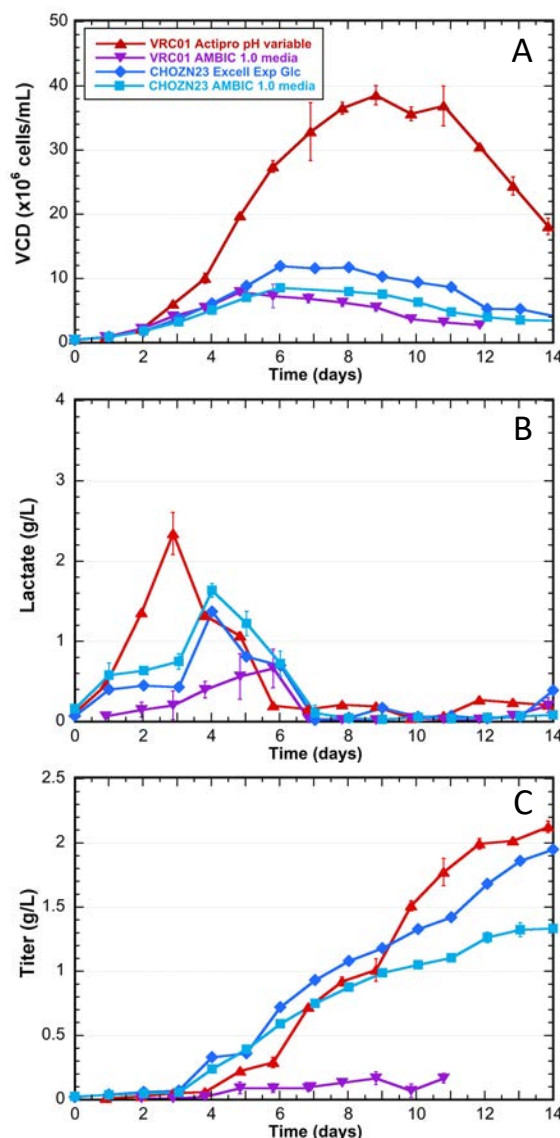


Fig. S2 Growth, lactate, and titers for two strains and three media/feeding schemes using the PID settings finalized in the third tuning experiment A) Viable cell density (VCD); B) Lactate; and C) IgG (titer). CHO VRC01 cultures grown with identical media and feeding scheme as described in the Materials and Method section, except the pH setpoint was varied as shown in **Fig. S3** (red triangles, N = 3). CHO VRC01 cultures grown using a proprietary media (AMBIC 1.0 media and feed with 3% daily feeding) (purple inverted triangles, N = 3). CHOZN GS23 cultures grown in EX-CELL Advanced CHO Fed-batch Medium and Feed 1 (Millipore Sigma) (light blue diamonds, N = 1). CHOZN GS23 cultures grown in AMBIC 1.0 media and feed with 5% bidual feeding (cyan squares, N = 3). Error bars represent one standard deviation.

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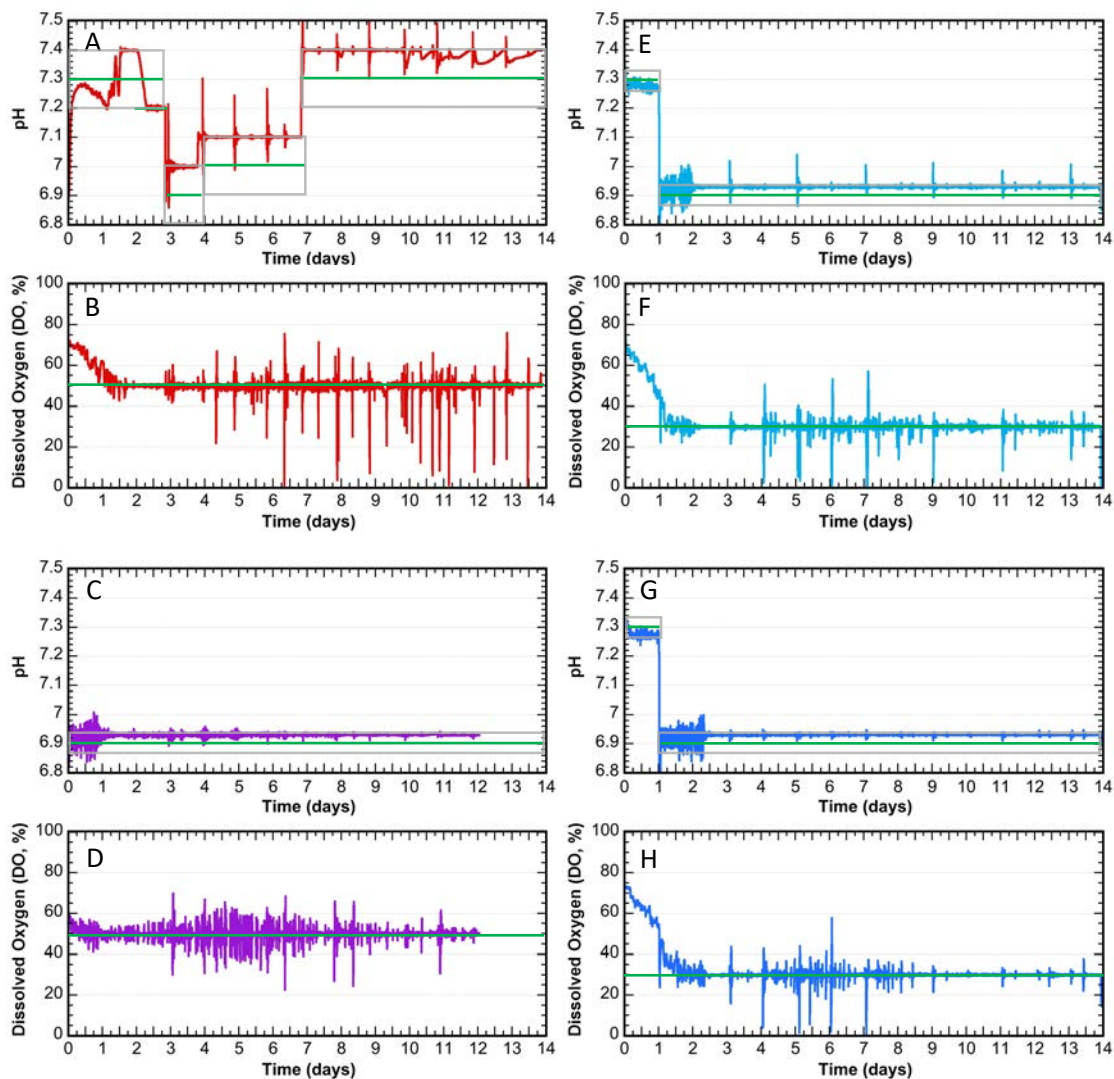


Fig. S3 Dissolved oxygen and pH controlled for two strains and three media and feeding schemes using the PID settings finalized in the third tuning experiment Panels A) and B) are pH and DO profiles, respectively, for CHO VRC01 cultures with identical media and feeding profiles as used during the PID tuning studies, except the pH setpoint was varied as shown, and the pH was control with DBs. Panels C) and D) are pH and DO profiles, respectively, for CHO VRC01 cultures grown in a proprietary media (AMBIC 1.0 media and feed with 3% daily feeding). Panels E) and F) are pH and DO profiles, respectively, for CHOZN GS23 cultures grown in EX-CELL Advanced CHO Fed-batch Medium and Feed (Millipore Sigma). Panels G) and H) are pH and DO profiles, respectively, for CHOZN GS23 cultures grown in AMBIC 1.0 media and feed with 5% bidiurnal feeding. The green horizontal lines in A), C), E) and G) indicated the pH setpoints, or the DB mid-point. The grey boxes indicated the DB. The green horizontal lines in B), D), F) and H) indicated the DO setpoints. These are representative profiles for a single culture condition shown in **Fig. S2**.