

## Supplementary materials

### Mapping the biological activities of filamentous oxygenic photogranules

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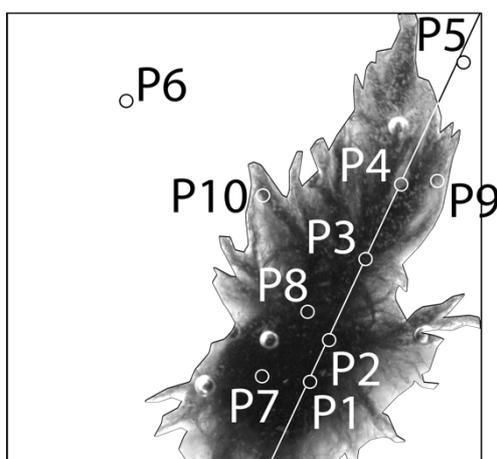


Figure S1: OPG stereomicroscopic image and location of points P1 – P10 used for model calibration. P1, P2, P7 and P8 are located near the center of the photogranule. P3, P4, P9 and P10 are within its filaments. P5 and P6 are in the bulk.

Figures S2 – S11 show the details of the best fits of models for points P1 – P10 associated with scenarios 1 – 8 (see Table 1 in the main text).

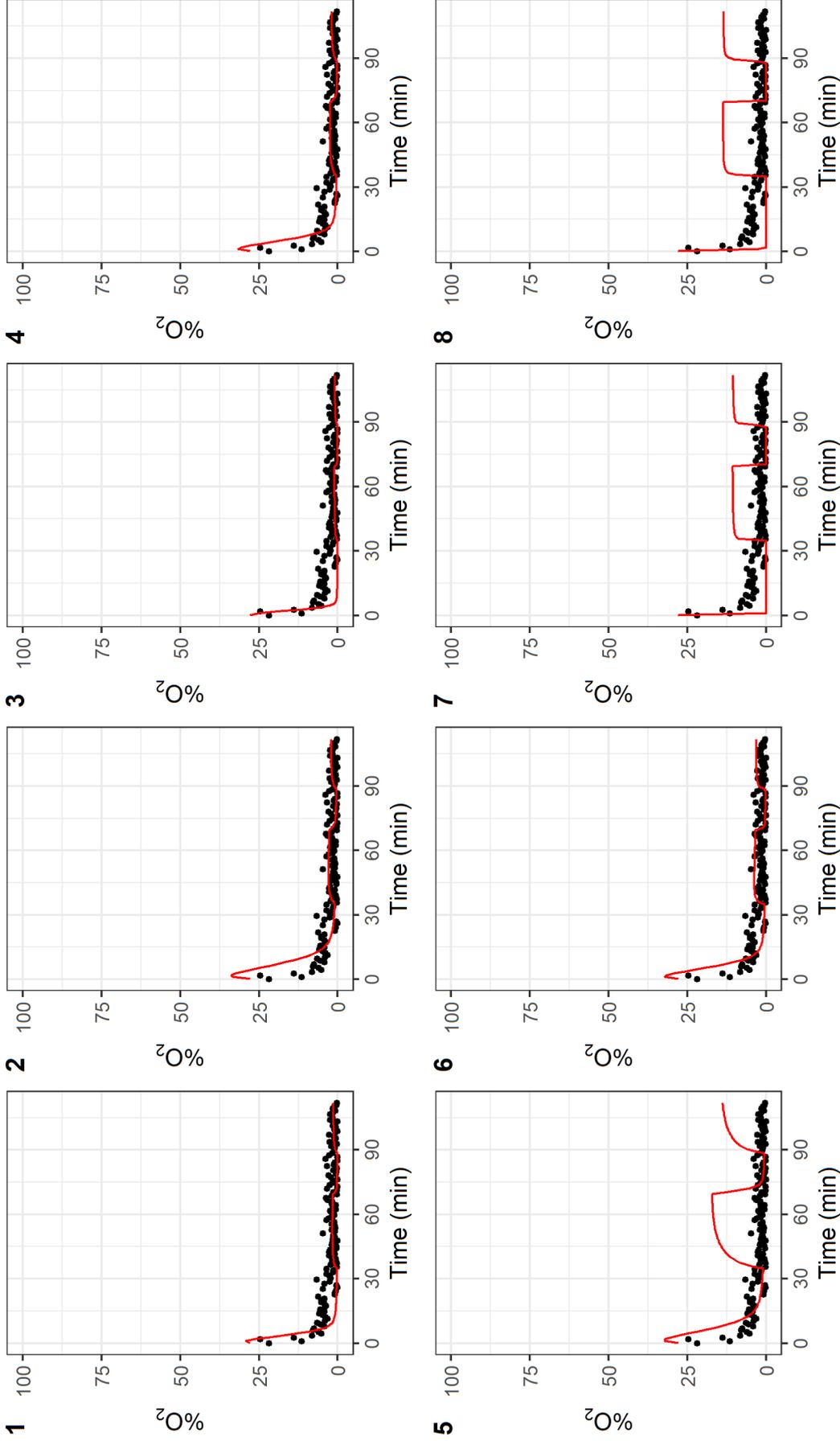


Figure S2: Oxygen saturation (with respect to air) at point P1 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

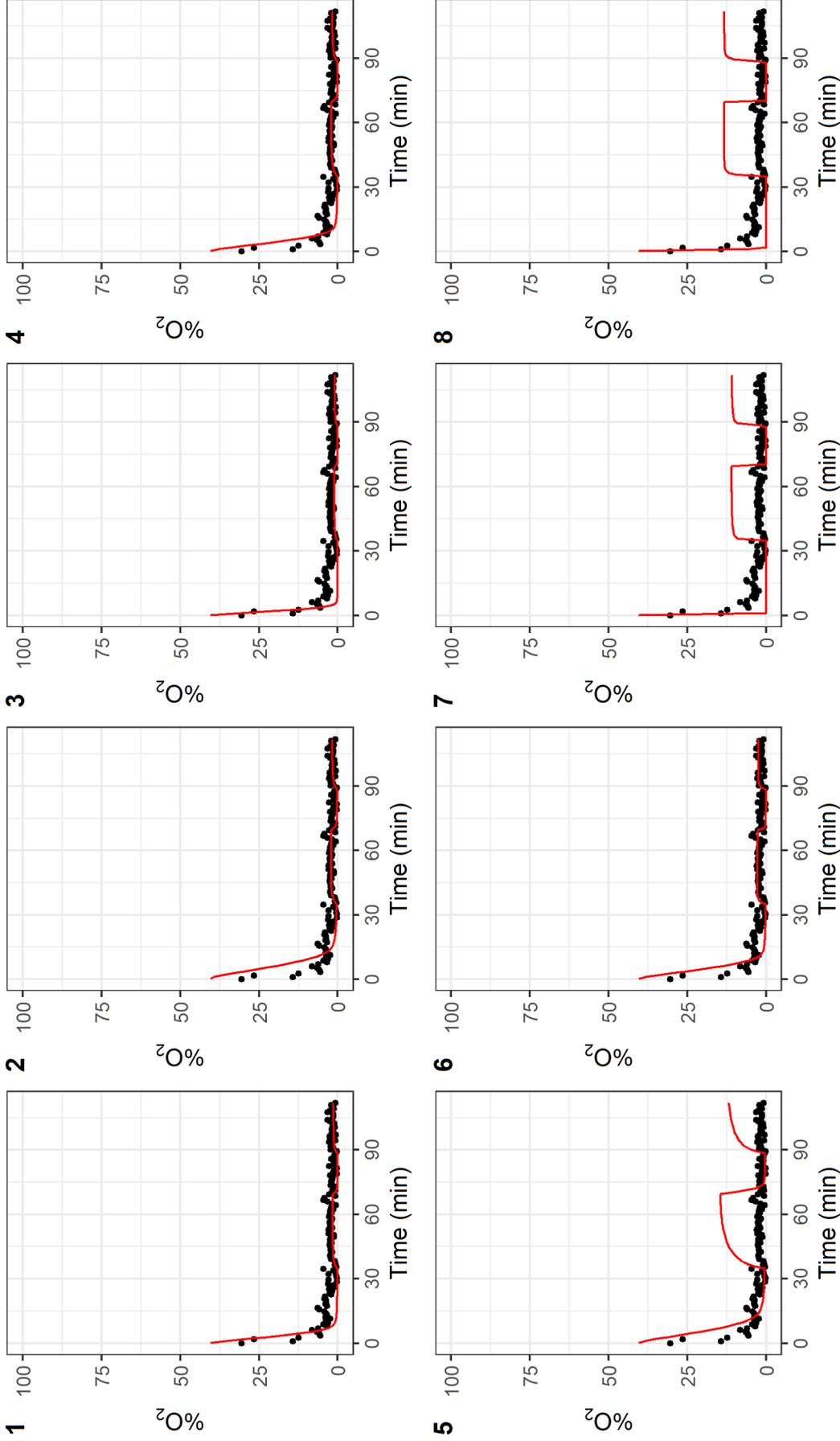


Figure S3: Oxygen saturation (with respect to air) at point P2 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

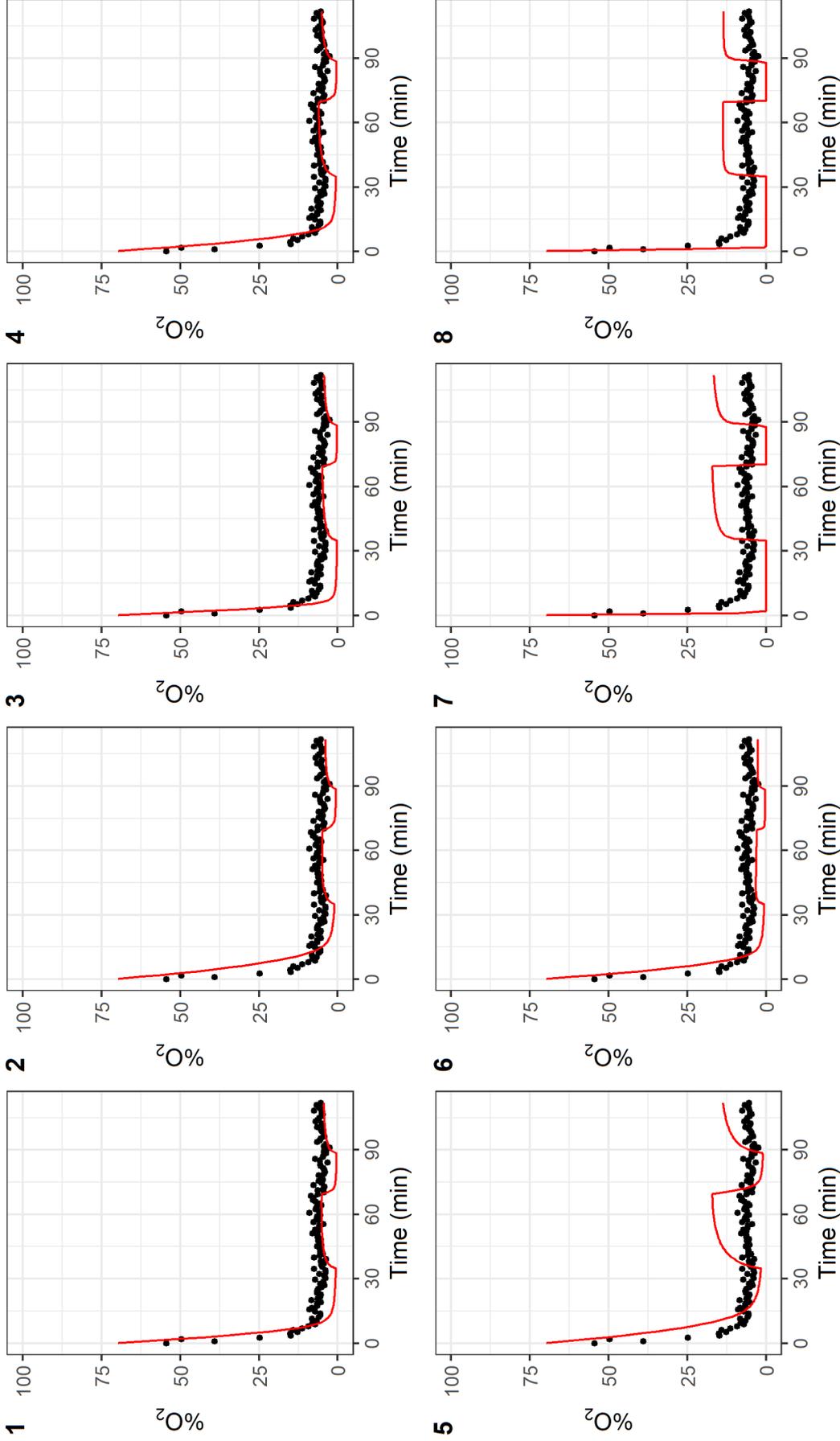


Figure S4: Oxygen saturation (with respect to air) at point P3 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

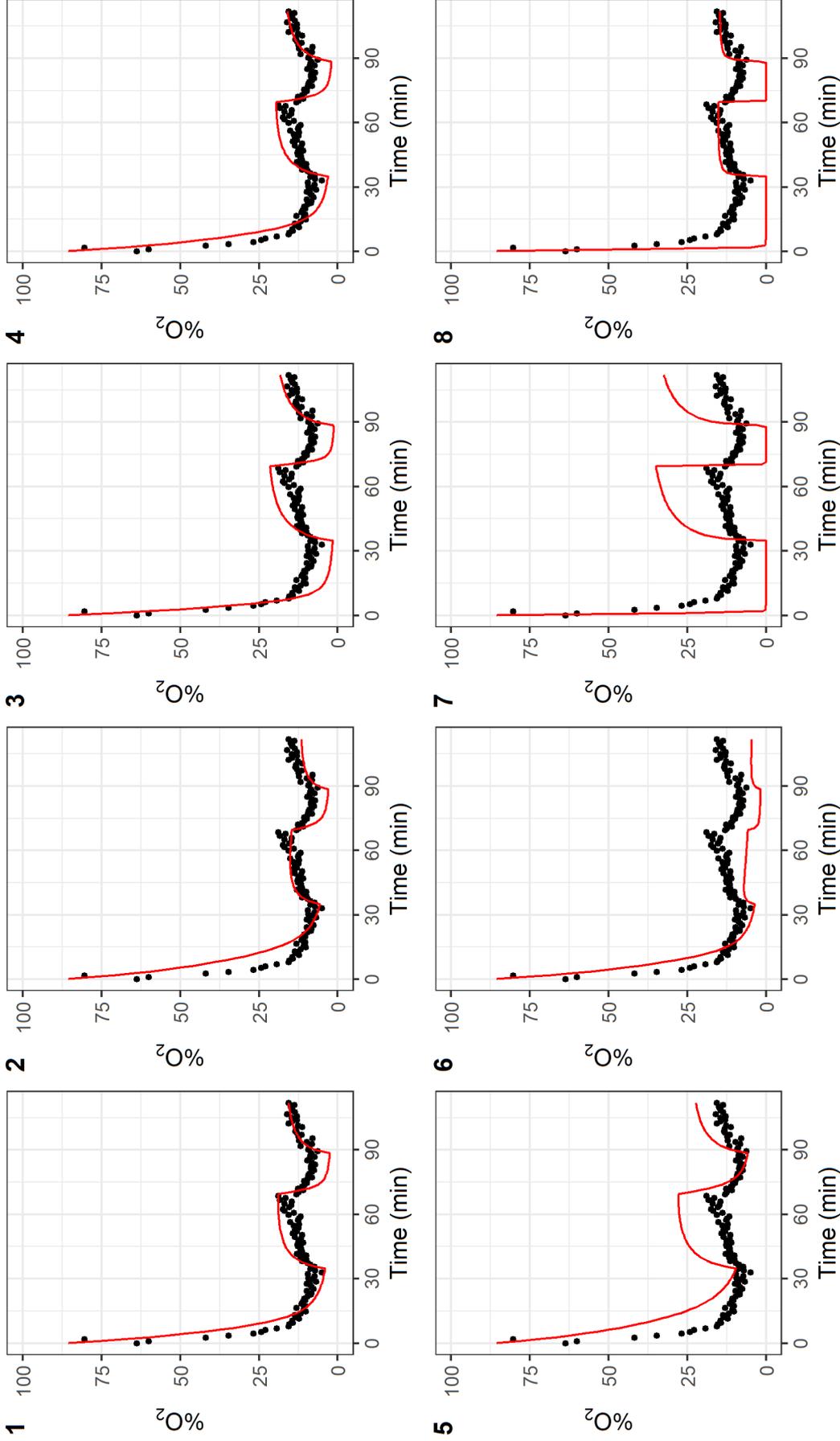


Figure S5: Oxygen saturation (with respect to air) at point P4 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

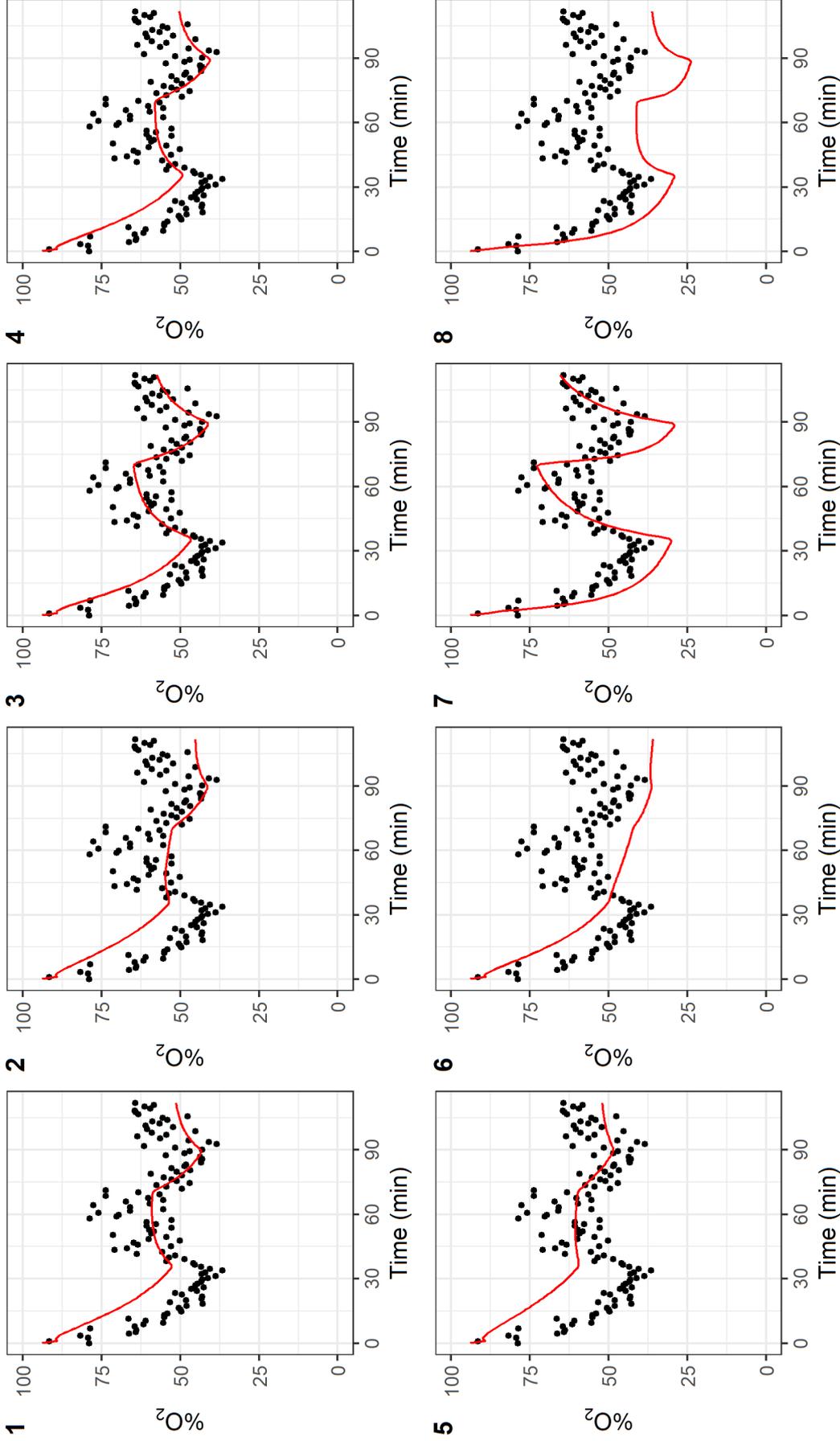


Figure S6: Oxygen saturation (with respect to air) at point P5 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

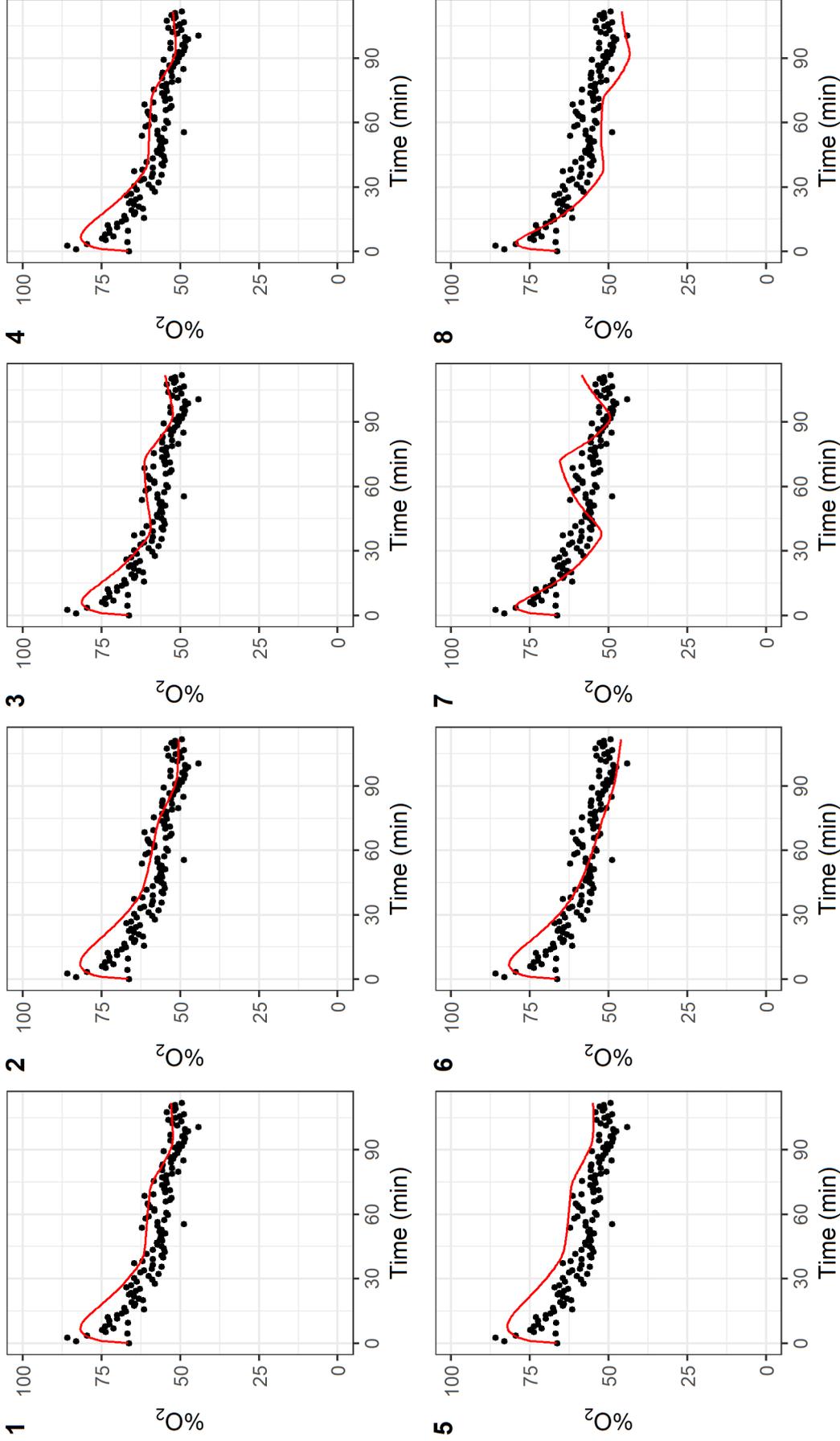


Figure S7: Oxygen saturation (with respect to air) at point P6 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

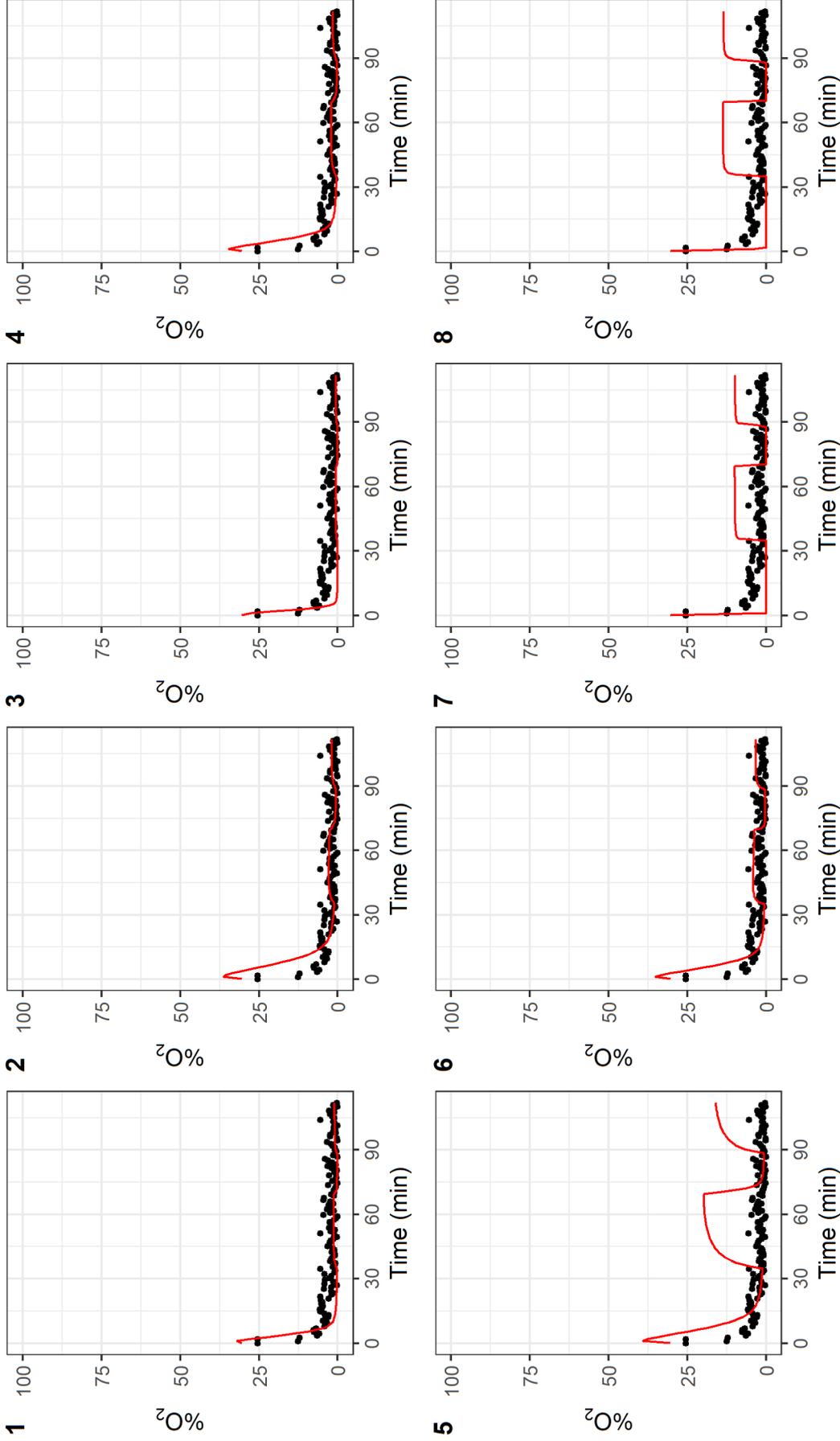


Figure S8: Oxygen saturation (with respect to air) at point P7 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

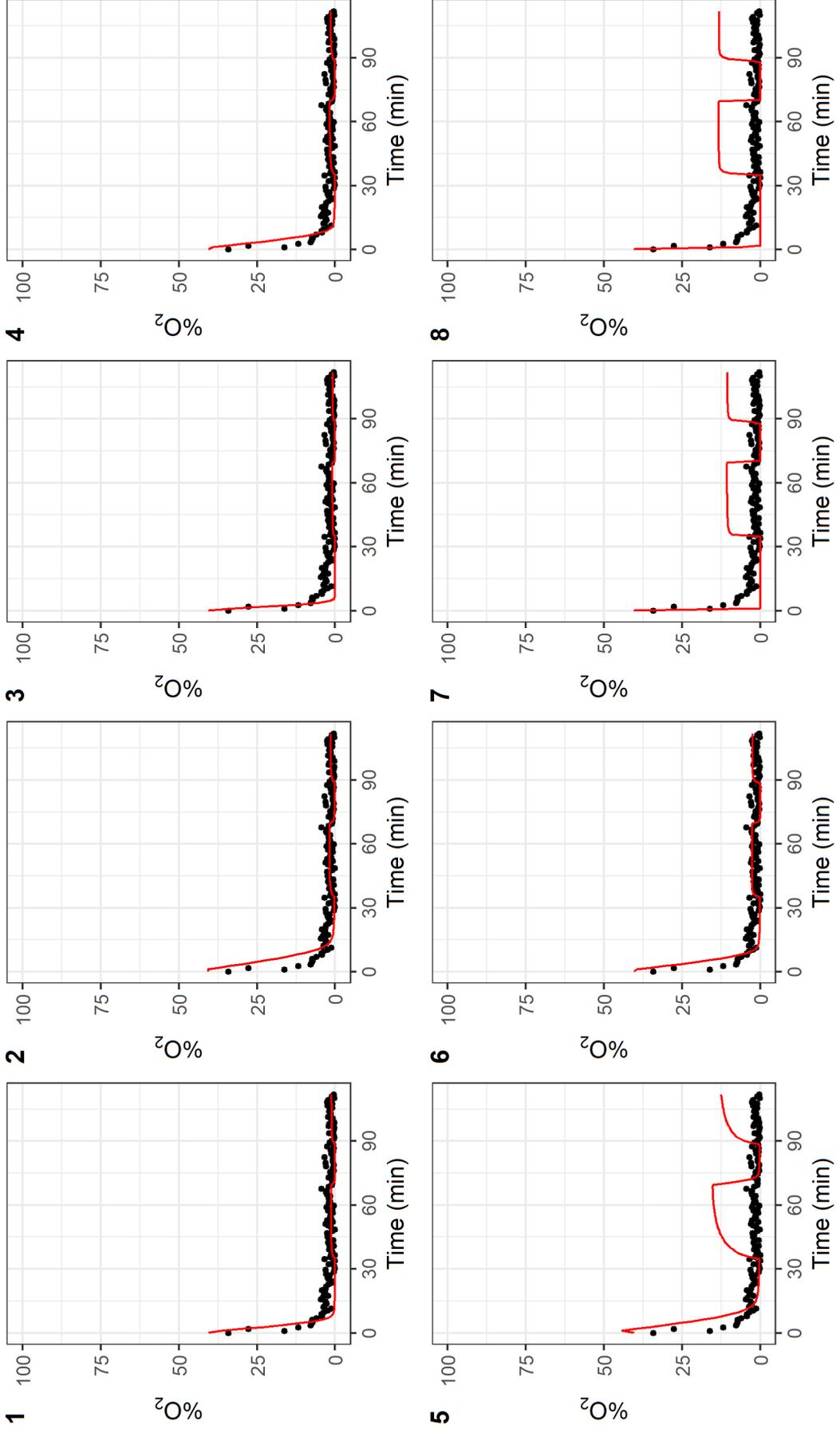


Figure S9: Oxygen saturation (with respect to air) at point P8 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

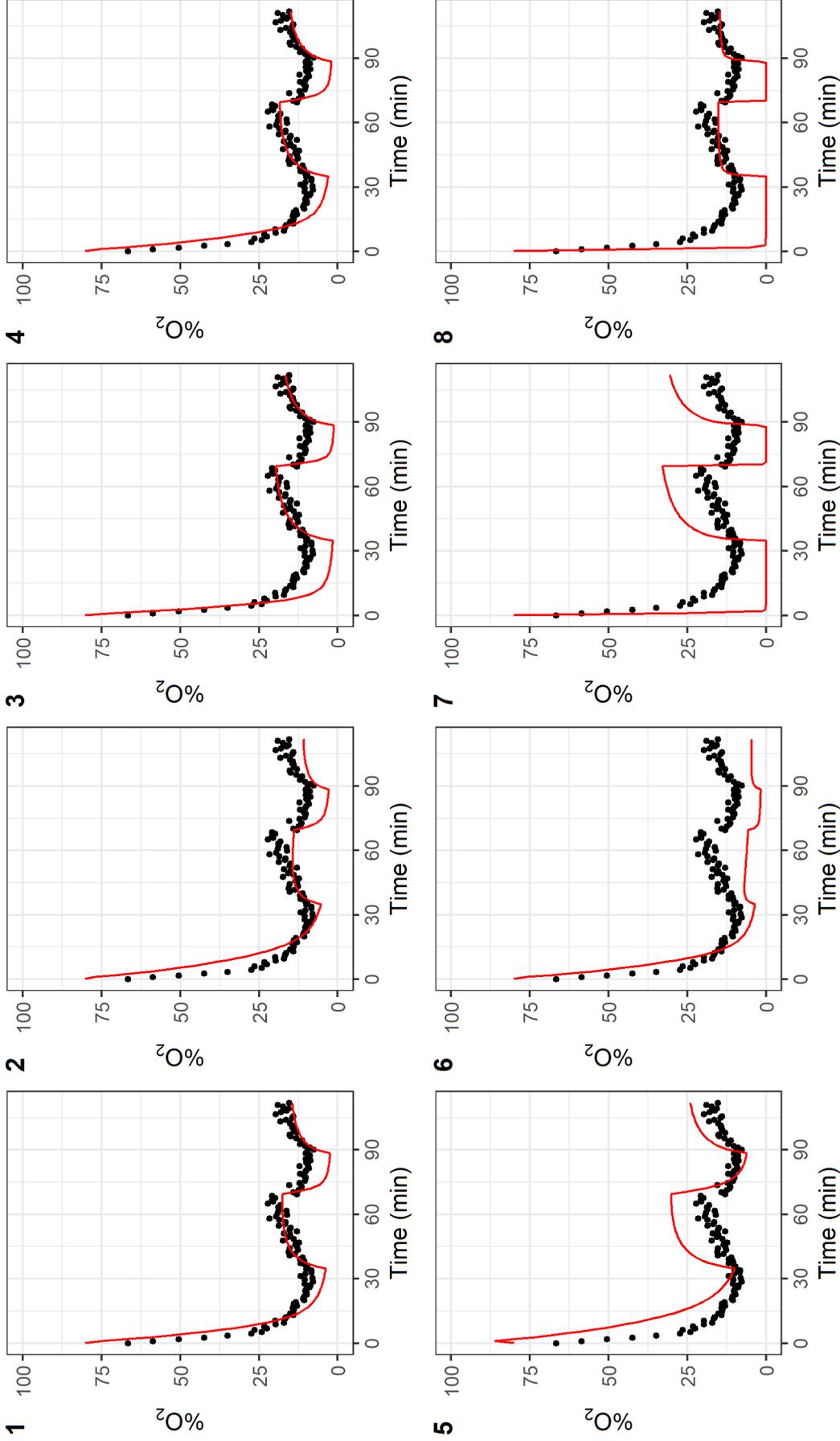


Figure S10: Oxygen saturation (with respect to air) at point P9 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.

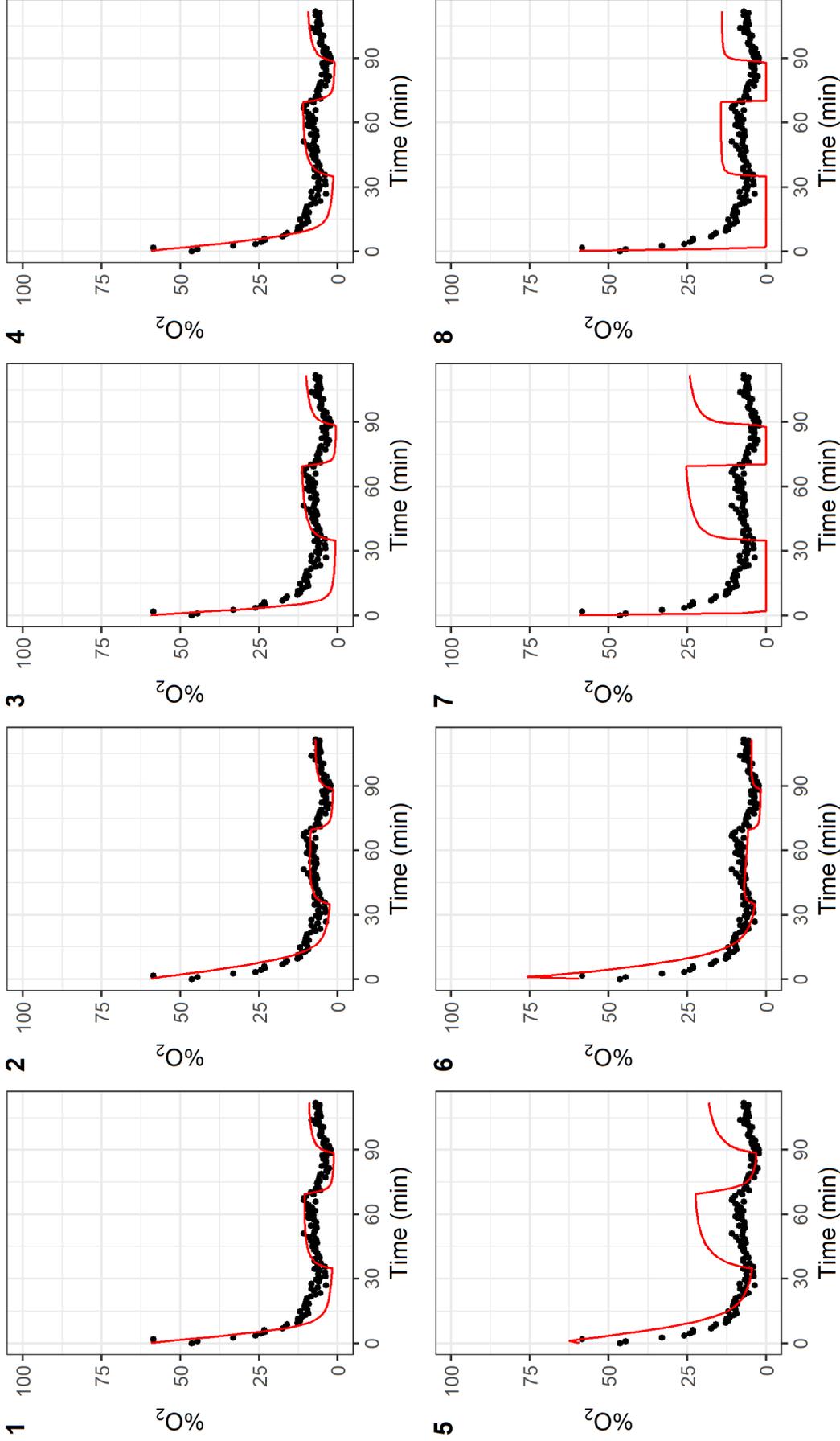


Figure S11: Oxygen saturation (with respect to air) at point P10 over time. The points are measured data, red solid lines are the model output. Panels 1 - 8 correspond to scenarios 1 - 8 respectively.