SUPPLEMENTAL MATERIAL

ONLINE FIGURE LEGENDS

Online Figure 1. Optical mapping of AVJ #3 during Iso perfusion showing conduction between the His bundle and IVS.
Panel A: OAPs and their first derivatives (dV/dt) during a spontaneous AVJ rhythm after 20 minutes of Iso perfusion. OAPs were recorded from (1) the atria, (2) the His bundle, and (3) the ventricular breakthrough site as indicated in panels B and C. OAPs show 2:1 conduction between the atrial-His (A and H) and IVS (V).
Panels B and C: Atrial, AV nodal-His, and ventricular activation maps.
Abbreviations are the same as in **Figures 1 and 2.**

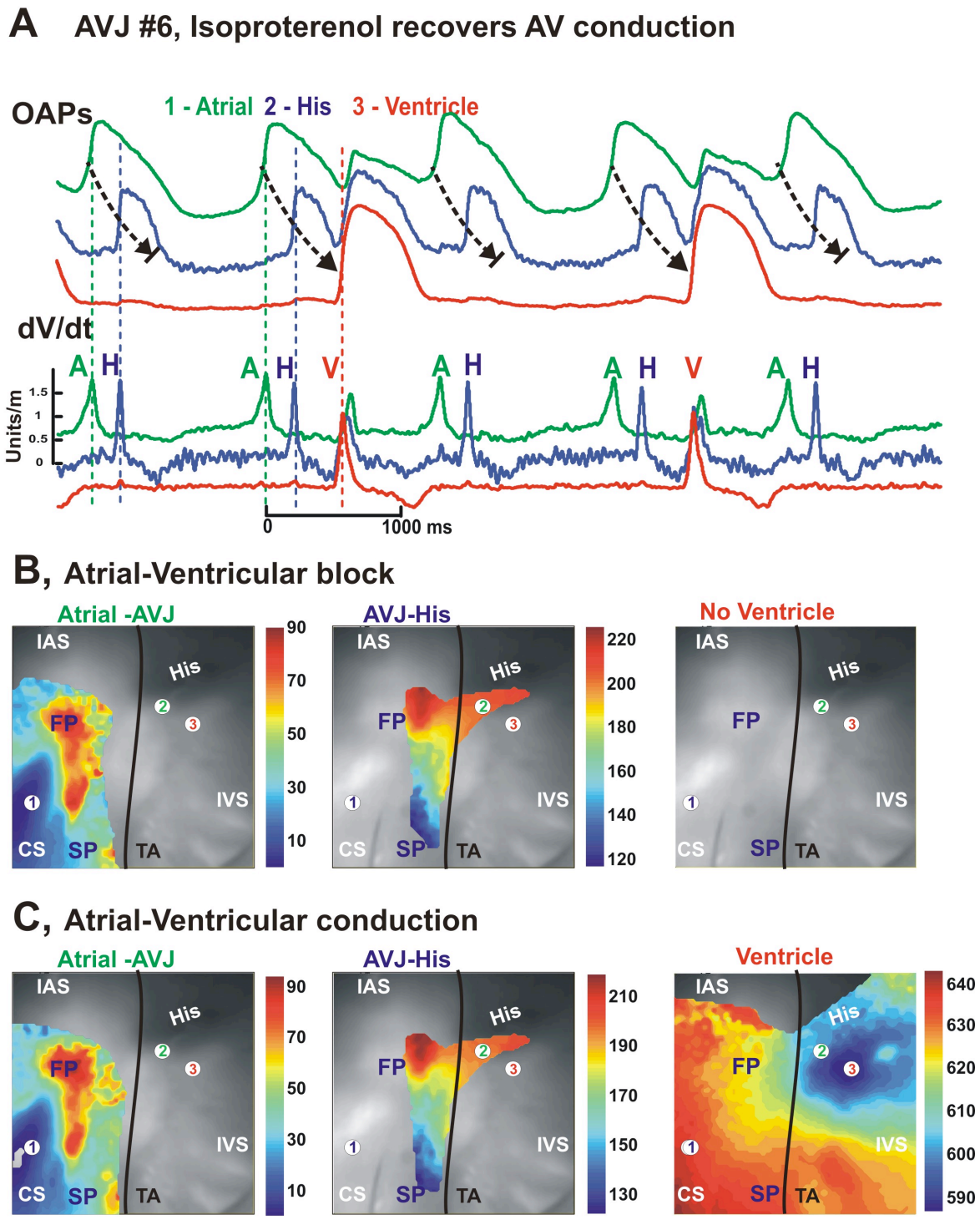
Online Figure 2. Optical mapping of AVJ #2 during intrinsic rhythm in control: Evidence of longitudinal dissociation.
Panel A: OFV with an anatomical schematic overlay.
Panel B: OAPs, as indicated by the numbers in panel A, showing retrograde and anterograde activation separated by the dashed blue line.
Panels C and D: Activation maps of retrograde and anterograde activations. White arrows show the main conduction directions.

Online Figure 3. Optical mapping of AVJ #2 during washout of ACh: Bifocal pacemaker activity.
Panels A and B: Non-normalized OAPs recorded from sites 1-4 in panels C and D during washout from ACh over the course of 10 minutes.
Panels C and D: Activation maps showing exit block from the AVJ (panel C), resulting in additional asynchronous activation from transitional pacemaker cells (panel Da), which propagated through the CN (panel Db) and re-excited the His bundle (panel Dc). This phenomenon was found in 3 preparations.

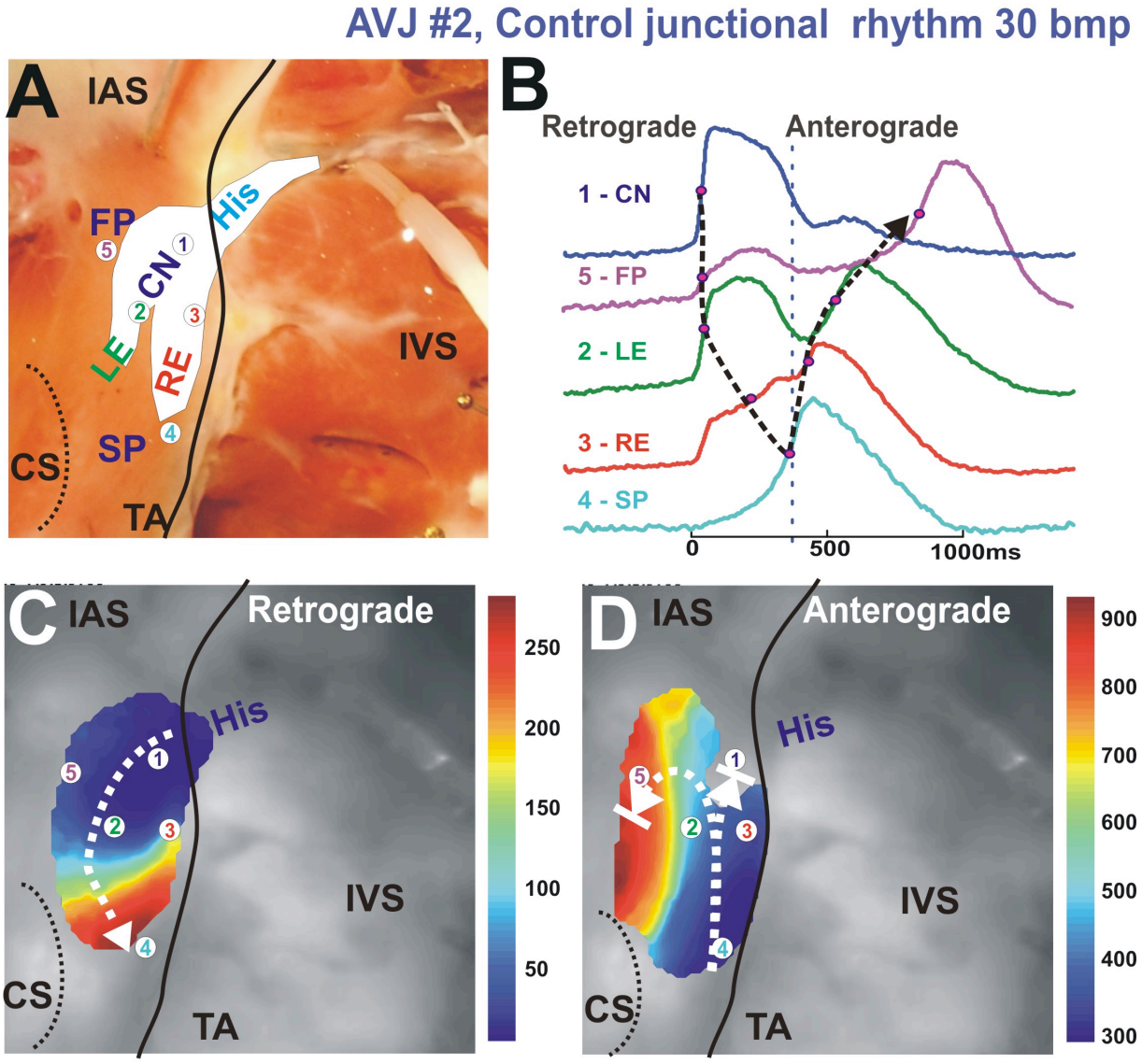
Online Figure 4. Optical mapping of AVJ #5 during Iso and ACh perfusion.
Panel A - Epicardial photograph of an AVJ preparation overlaid with an anatomical schematic. Abbreviations are the same as in Figure 1.
Panel B – OAPs from sites 1-4 as indicated in panel A during Iso and ACh perfusion.
Panels C and D – His-AVN and atrial activation maps showing the leading pacemaker remaining in the same location (NH region) during both Iso and ACh perfusion.

ONLINE FIGURES

Online Figure 1

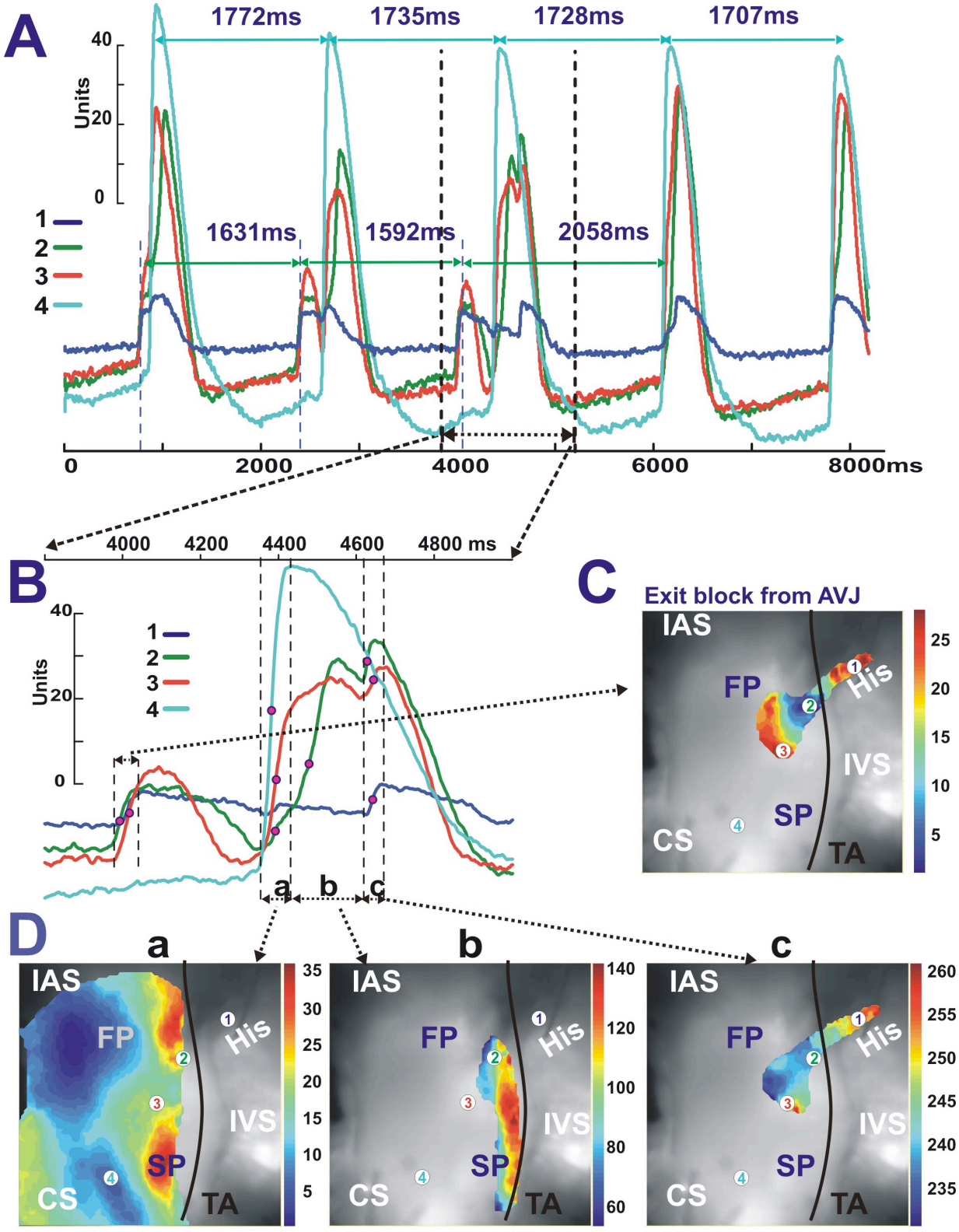


Online Figure 2



Online Figure 3

AVJ #3, Washout from ACh



Online Figure 4