Description: Included are 5 files in standard stereolithography (STL) format, containing 3D surfaces for the prostate mold, fiducial cartridge, and imaging cradle. These files can be loaded, visualized, and edited in computer aided design (CAD) programs. They can also be manufactured via fused deposition modeling 3D printers. This data is provided to facilitate adoption of molds for scanning of *ex vivo* specimens and MRI-Pathology correlation.

Size: Including this README document, the combined size of all files is 451 KB.

Platform: The STL Files can be visualized natively on apple computers (macOS 10 or higher) using Preview. They can be edited using CAD programs such as Solidworks (Dassault Systémes, France) or Autocad (Autodesk, San Rafael CA). They can be 3D printed using consumer-grade 3D printers such as the Makerbot (Makerbot Industries, Brooklyn NY), Series 1 (Type A Machines, Oakland CA), or Lulzbot Taz 6 (Aleph Objects, Loveland CO). 3D printing software such as Makerware (Makerbot Industries, Brooklyn NY), Simplify3D (Simplify3D Inc., Cincinnati OH), or Cura (Linked Here) can be used.

Major Component Description:
   • "Prostate Mold Posterior, No Cavity.STL" contains the posterior half of a mold, prior to creation of a cavity to house *ex vivo* tissue. The mold contains 9 slits spaced 1.5 mm apart to guide a sectioning knife and slice tissue housed within it. Exterior labels indicate anatomic position. When assembled with the anterior half, the mold measures 5x6x7 cm.
   • "Prostate Mold Anterior, No Cavity.STL" is the anterior mold half corresponding to the file above.
   • "Fiducial Cartridge.STL" is the fiducial cartridge housed within the mold halves. Once the cartridge is filled with 2% agarose solution, a pattern of light and dark bands is visible when viewed on MRI. Each band corresponds to one of the slits within the mold, and thus can be used to facilitate registration.
   • "Mold Cradle.STL" contains a frame for holding the mold in position within a sealed cylindrical container during *ex vivo* MRI.
   • "Exemplary Mold with Cavity, Printing Configuration.STL" shows the fiducial cartridge alongside both mold halves containing an exemplary prostate cavity, in the orientation recommended for 3D printing.

Detailed Setup Instructions:
   Instructions are provided for use with a prostate STL model, Solidworks CAD software, and Simplify3D printing software. Steps will be similar with other organs, CAD programs, and printing programs.
   1. Open "Prostate Mold Anterior, No Cavity.STL", "Prostate Mold Posterior, No Cavity.STL", and the prostate STL model in Solidworks.
   2. Place both mold halves into a Solidworks assembly, and mate them together such that the left/right face, apex/base face, and coronal bisecting plane are aligned.
   3. Place the prostate model within the mold, such that the *in vivo* MRI planes are aligned with the mold slits.
   4. Create a prostate cavity within the molds using Insert/Molds/Cavity.
   5. Export the mold top and bottom as stereolithography (.STL) files.
   6. Load the exported mold top and mold bottom files within Simplify3D, with the same orientation observed in "Exemplary Mold with Cavity, Printing Configuration.STL".
   7. Load default print settings, but with the following parameters changed:
        a. Infill = 20%
        b. Top and Bottom Solid Layers = 0
        c. Layer Height = 0.2 mm

8. 3D Print. This will take ~5 hours, depending on printer.
9. Print the Mold Cradle with default print settings, layer height 0.2 mm, and 100% infill. This will take ~6 hours, depending on printer.
10. Print the fiducial cartridge with default print settings, layer height 0.2 mm, and 100% infill, in the orientation observed in "Exemplary Mold with Cavity, Printing Configuration.STL". This will take ~30 minutes, depending on printer.
11. Fill the fiducial cartridge with 2% agarose, and seal the apertures if long-term storage is required.
12. Place the fiducial cartridge within the mold.
13. Place the *ex vivo* tissue sample within the posterior mold half.
14. Close the mold, and place within the mold cradle.
15. Place the mold cradle within cylindrical container (1000 mL Nalgene, Thermo Fisher Scientific)
16. Immerse with perfluorocarbon solution (Fomblin Y-LVAC 6-06, Solvay Solexis, NJ, USA), and seal the cylindrical container.
17. Place within bore of scanner, and acquire images.
18. Remove mold from cylinder and cradle, and (without altering prostate position) slice along the mold slits from apex to base.
19. Proceed with whole mount histopathology processing.

Output Description: The result will be histopathology slides corresponding to the molds slits. Since the mold slit positions are observable via the fiducial cartridge on *ex vivo* MRI, through-plane registration between MRI and pathology is assured.

Contact Information: For questions regarding the procedure, contact Alan Priester at aPriester@mednet.ucla.edu.