1161-76-142 **Luoding Zhu*** (luozhu@iupui.edu), 402 N Blackford Street, Indianapolis, IN 46202, and **Kaoru Sakai**. *Modeling and simulation of blood flow past the distal arteriovenous graft with intimal hyperplasia.* Preliminary report.

Late-stage-kidney-disease patients rely on hemodialysis for the maintenance of their regular lives. Arteriovenous graft (AVG) is one of the commonly used devices for dialysis. However, this artificially created shunt may get clotted and eventually causes the dialysis to fail. The culprit behind the AVG clotting and failure is the intimal hyperplasia (IH), the gradual thickening of vein-wall in the vicinity of the vein-graft conjunction, which is not yet well understood. In this work we investigate the effects of the IH development, including its location and severity on the flow and force fields in the AVG anastomosis. The stenosis is modelled in the shape of a Gaussian function with different height, spread, and location. The blood is modelled as a viscous incompressible fluid, and the blood flow (pulsatile) is modelled by the lattice Boltzmann equations (D3Q19). The fluid-structure-interaction is modelled by the immersed boundary (IB) framework. Our computational results show that the IH severity has the most influence on the WSS, WNS, and the axial OSI. The stenosis location and flow pulsatility have little effect on flow and force fields. Our results indicate that the progression of the IH tends to accelerate the closure of the vein lumen. (Received August 15, 2020)