Tuesday, May 1st at 1:00 pm
Emerson Auditorium
Bauer Hall

Scott Hollister, PhD
Professor and Patsy and Alan Dorris Chair in
Pediatric Technology
Wallace H. Coulter Department of
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“The Road from Academic Research to Clinical Use of 3D
Patient Specific Devices: Can we avoid being lost in
translation”*

Two technical advances over the past 10-15 years have made the capability to create
medical devices from the academic setting a reality. First, it is now straightforward to read
patient image data as the basis for designing a patient device and to further simulate the
behavior of that device in the patient. Second, there is increasing capability to 3D print
that device from a variety of biomaterials including titanium alloy, PolyEtherEsterKetone
(PEEK), PolyEtherKetoneKetone (PEKK), and Polycaprolactone (PCL) among others. 3D
printing makes it feasible to create patient specific devices for niche patient markets due
to the significantly lower manufacturing costs compared to traditional methods.
Addressing such niche markets will likely increasingly fall to academic medical centers
and biomedical engineering departments. However, such going down this path raises a
number of challenges outside the typical academic endeavors. First and foremost is the
need to address regulatory and design/quality control concerns from the FDA. Developing
research that can be published and compete for extramural funding while being
developed within design/quality control guidelines requires a balancing act, as research
favors cutting edge complex ideas while clinical use favors established tried and true,
simpler measures. This talk will highlight our own experience is addressing these
conflicting issues for a patient specific 3D printed airway splint without getting lost in
translation.

About Dr. Hollister
Dr. Hollister is the Patsy and Alan Dorris Chaired Professor of Pediatric Technology in the Wallace H. Coulter
Dept. of Biomedical Engineering at Georgia Institute of Technology and Emory University. Hollister came to the
Coulter Department from the University of Michigan, where he directed the Scaffold Tissue Engineering Group,
which develops degradable scaffold material systems to deliver stem cells, genes and proteins to regenerate tissue
defects. Dr. Hollister and his collaborators have advanced development of multiple strategies for spine fusion and
disc repair, cranio-maxilllo-facial reconstruction, orthopaedic trauma and joint reconstruction, and cardiovascular
reconstruction. as part of this effort, Dr. Hollister designed and developed a variety of medical devices utilizing
3D printing, an area of active research and developments since 1997. Dr. Hollister is a fellow of the American
Institute of Biological Engineering. His work on a biodegradable tracheal splint along with Dr. Glenn Green was
given a Popular Mechanics 2013 Breakthrough Innovation Award. This implantation of this 3D printed device
achieved through a Humanitarian Use Devices (HUD) exemption to save the lives of two children has been
other media.