**3D BioPrinting Conference**:

3D Bioprinting is the utilization of 3D printing and 3D printing–like techniques to combine cells, growth factors, and biomaterials to fabricate biomedical parts that maximally imitate natural tissue characteristics.

3D-Bioprinting holds much promise in advancing medicine as tool to replicate cellular complexity of tissue environment, ex vivo for drug screening and as a means of engineering well-defined functional tissue units for transplantation (scaffolds, which can be used to regenerate joints and ligaments).

3D Bioprinting generally follows three steps:

* Pre-bioprinting, the process of creating a model that the printer will later create and choosing the materials that will be used.
* Bioprinting, mixture of cells, matrix, and nutrients (bioinks) are placed in a printer cartridge and deposited using the patients’ medical scans.
* Post-bioprinting, creation of a stable structure from the biological material.

For 3D Bioprinting there are three main approaches:

* Biomimicry
* Autonomous self-assembly
* Combination of both, also called mini-tissue building blocks

**3D Dental Printing Conference**

This conference which is part of the [3D Medical Printing Series](https://www.3dmedicalconference.com/?__hstc=159460578.8718e309764e154101f759ae92095ceb.1606216130579.1606216130579.1606216130579.1&__hssc=159460578.4.1606216130579&__hsfp=1360473613), will bring together the international 3D Dental Printing and Digital Dentistry community to showcase the work of researchers and industry in the 3D Dental Printing / Digital Dentistry field and its applications, with a view to fostering closer ties and collaborations. The overall goal of this conference is to address both the technologies and the applications — from early technology development to downstream applications.

**Topics:**

* 3D dental Printing with Biocompatible materials
* 3D scanning systems
* Additive manufacturing of metal dental restorations – ready for production
* 3D virtual orthognathic surgery: planning and follow-up
* 3D Printed dental implants
* Clinical aspects of Rapid Prototyping technologies
* Legal issues for 3D Dental Printing

**3D Medtech Printing Conference**

The medical implant segment is expected to grow at the fastest rate among all applications in the coming years.

**Medical Implants**
Orthopaedic manufacturers are turning to 3D Printing to drive the long term change in the increased complexity of medical implant design and demand for tailor made patient-specific solutions, with all the benefits that can bring. These implants can promote patient recovery, as often it is the only alternative to amputation. Thin scaffolds that perfectly follow the contour of a bone or porous metal parts are easily manufacturable opening the door to many applications and designs that were not previously possible (including facial bones, radius and ulna).

**Surgical guides**
Surgical guides allow docters to physically handle and visualize the anatomical model that is specific to the patient about to undergo surgery. This enables the surgeon to get to know the patient’s exact anatomy from multiple angles and anticipate what to expect during the operation. In addition to increased accuracy, improved safety, time saving, the guide is also a tool to inform / explain the patient how the operation will take place.

**Surgical instruments / Medical Devices**
Surgical instruments, like forceps, hemostats, scalpel handles and clamps can be produced using 3D printers. Creating personalised surgical instruments offers many benefits. They facilitate faster and less traumatic procedures, increase a surgeon’s dexterity and support better surgery outcomes.

**Hearing Aids**
Nowadays any Hearing Aid company uses 3D Printing for the creation of hearing aid shells and earpiecessince these can be digitally fitted to exact anatomical specifications (thanks to 3D scanning) and customized pieces can be mass-produced.

It is clear that the production of 3D Printed medical devices provides a relatively fast and effective solution for complex surgical cases. However, there are still numerous challenging open issues in 3D Medtech Printing, like:

* materials
* design/printing/post-printing validation
* printing characteristics and parameters
* physical/mechanical assessment of final devices
* biological consideration of final devices (including cleaning, sterility and biocompatibility)

**3D Pharma Printing Conference**

3D printing is making a name for itself in medicine manufacturing. While it’s hard to foresee the wholesale replacement of current tablet manufacturing processes, 3D printing is expected to find a place in certain niche medications and in personalised tablets.

For so-called orphan drugs, the inherent versatility of 3D printing is particularly appealing. Rather than the current situation of pharmaceutical companies needing to maintain expensive specialist infrastructure to manufacture medicines of which low numbers are sold, it is theoretically possible to print many different types of tablets by simply changing the powder used, or even by just changing the ‘ink cartridges’ in commercially available 3D printers.

This ink cartridge concept also offers the possibility of decentralising tablet manufacture in certain circumstances. It also opens up the possibility of using 3D printing in personalised medicine – to produce a tablet designed to meet the needs of a single patient, the drug loading, combination of drugs and the release profile of the formulation.

**Opportunities and challenges**

* Faster pre-clinical evaluation of new drugs
* New formulations for improved drug delivery
* Patient-centric design / personalised medicine
* Local manufacture / Simplified logistics
* Reduced wastage
* Regulation / Certification
* Safety / Quality control