

Transferred Technologies up to 2010



**Technology transfers foster a long lasting relationship
between the institute and its industrial partners**

Blood Bag

The first technology transferred by the Institute



Blood and blood products for transfusion are stored in disposable plastic (PVC) bags, which replaced reusable glass bottles. Being more convenient for use and energy efficient while cooling, plastic bags changed the way in which blood components could be separated and used.

Transferred through NRDC to :

- Peninsula Polymers Limited (Currently Terumo Penpol), Thiruvananthapuram (1984)
- Hindustan Latex Limited (Currently HLL Lifecare Ltd), Thiruvananthapuram **(1991)**
- Electro Medical & Allied Industries Limited, Kolkatta **(1993)**
- J.MITRA Industries Limited, New Delhi **(1995)**

First Indian presence in the manufacture of blood bags. Around 50 million blood bags manufactured through the technology partners. Exported to around 80 countries. Terumo Penpol is the largest manufacturer of blood bags in Asia.

Mechanical Heart Valve



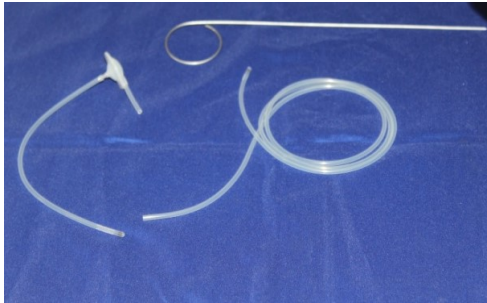
Natural heart valves perform the function of maintaining unidirectional blood flow. They become dysfunctional for a variety of reasons like rheumatic heart disease, ageing etc. Most of these may require complete surgical replacement with artificial devices. Superior haemodynamics, structural integrity, low profile and silent operation have been built into the design. The valve frame is made of a chrome cobalt alloy, the occluder (tilting disc) is made of implant tested surgical grade UHMWPE (Ultra High Molecular Weight Poly Ethylene) and the sewing ring is made of polyester

Transferred to :

- TTK Pharma Ltd, **(1991)**
(Currently TTK Healthcare Ltd)

An innovation which combined quality with affordability. 25 years of clinical existence. One lakh implantations in patients across 400 centres in India and abroad.

Hydrocephalus Shunt



Hydrocephalus is a medical condition in which there is an abnormal accumulation of cerebrospinal fluid (CSF) in the cavities of brain. This may cause increased pressure inside the skull and progressive enlargement of the head, especially in young children. Although it does occur in older adults, it is more common in infants.

Hydrocephalus treatment is surgical, and involves the placement of a tube into the brain cavities to bypass the flow obstruction and drain the excess fluid into other body cavities, from where it gets reabsorbed. Most shunts drain the fluid into the peritoneal cavity.

Transferred to :

- Hindustan Latex Limited (Currently HLL Lifecare Ltd) **(1994)**
-
-

Bubble Oxygenator & Cardiomy Reservoir



Bubble Oxygenator is a device used during extracorporeal cardiopulmonary bypass for exchanging oxygen and carbon dioxide in the blood. It serves to replace the work of the lungs during the surgery. The gas exchange takes place directly between blood and oxygen bubbles.

Cardiomy reservoir is used for collection, filtration and reperfusion of blood from the surgical site.

Transferred to :

- South India Drugs & Devices Pvt Ltd, (1991), Chennai (Currently SIDD Lifesciences Pvt. Ltd.)

Concentric needle electrode



Concentric Needle electrode is used to record electromyogram (EMG), which detects the electrical potential generated by muscle cells when activated. EMG is used as a diagnostic tool for identifying neuromuscular diseases, assessing low-back pain, and other muscular disorders.

To perform intramuscular EMG, a needle containing two fine-wire electrodes is inserted through the skin into the muscle tissue. These needle electrodes are high precision disposable devices.

Transferred to :

- South India Drugs & Devices Pvt Ltd, (1999), Chennai (Currently SIDD Lifesciences Pvt. Ltd.)

Haemoconcentrator



Patients, especially children, undergoing cardiopulmonary bypass often develop the problems related to fluid over-load in the body.

Haemoconcentrator helps controlling this fluid over-load during cardiopulmonary surgery and considerably minimize the work load on kidneys.

Transferred to :

- South India Drugs & Devices Pvt Ltd, Chennai (**1999**),
(currently SIDD Lifesciences Pvt. Ltd.)
-

Membrane Oxygenator



Oxygenator is a device used during extracorporeal cardiopulmonary bypass for exchanging oxygen and carbon dioxide in the blood. It serves to replace the work of the lungs during the surgery.

Membrane oxygenator is the second generation device with improved performance and safety features. It employs microporous hollow fibre membranes for gas exchange. The absence of gas bubbles reduces hemolysis and propensity of air embolism.

Transferred to :

- South India Drugs & Devices Pvt Ltd, **(1995)** Chennai
(Currently SIDD Lifesciences Pvt. Ltd.)
-

Vascular Graft



The blood vessels carrying blood from the heart to other organs (arteries) are found to have different diseases like narrowing (coarctation), weakening of the wall (formation of aneurysms) etc. In such cases, one of the techniques employed is the replacement of that portion of the artery using synthetic tubular devices. Vascular grafts are synthetic porous tubular devices used for replacing such diseased arteries.

- Transferred to : TTK Healthcare Ltd, Thiruvananthapuram **(2007)**
-

Dental composites



Dental composites are types of synthetic resins used in dentistry as restorative material or adhesives. Synthetic resins evolved as restorative materials since they were insoluble, aesthetic, insensitive to dehydration, easy to manipulate and reasonably inexpensive. Dental composites constituting the following four products: Chemical cure, Light Cure, Radiopaque dental composite and Dentine bonding agent.

Transferred to :

- Anabond Stedman Pharma Research Pvt Ltd **(2004)**,
-

Glass Ionomer Cement



Glass ionomer cement are dental restoratives used for core build up, luting and restorative applications. It is used for prevention of dental caries. The material has good adhesive property with the tooth and hence it act as dental sealant.

Transferred to :

- Anabond Stedman Pharma Research Pvt Ltd **(2008)**
-

Hydroxyapatite & Bioactive composites for orthopaedic applications



Hydroxyapatite derived materials are used as synthetic bioactive graft for orthopaedic applications due to their molecular structural and compositional similarity with the mineral part of the bone. Porous granule form of hydroxyapatite is a general purpose synthetic bone graft material.

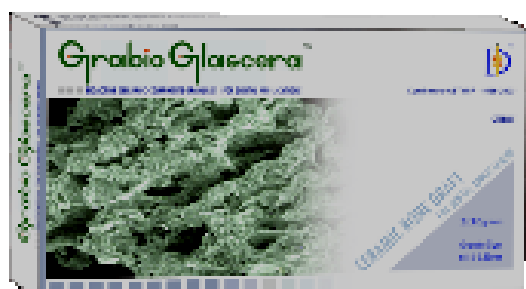
The bioactive composites are a new generation ceramic composites based on hydroxyapatite and bioactive glass used for various dental and orthopaedic applications.

There are different variants of the product like hydroxyapatite porous granules, graded porosity buttons for burr-hole closure, ceramic spacer for vertebral laminoplasty, bioactive composite blocks for iliac crest repair, bioactive composite porous blocks and rods etc. A basket of 5 product know-how were transferred.

Transferred to :

- Basic Healthcare Product (P) Ltd, Punjab. (2006)

Bioactive composites for dental applications



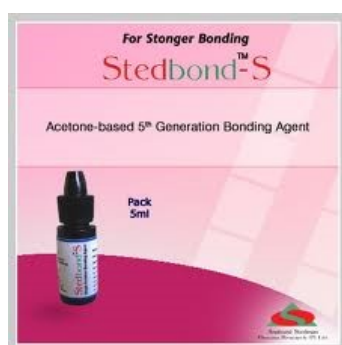
The bioactive composites are a new generation ceramic composites based on hydroxyapatite and bioactive glass used for periodontal bone regeneration.

The product is supplied as fine porous granules for defect filling.

Transferred to :

- Dorthom Medidents Ltd, Coimbatore. **(2007)**

Single solution bonding agent'



A single component dental bonding agent for replacing the two component system. This bonding agent carries out the priming and bonding activity together thus making the clinicians job easier.

Transferred to :

- Anabond Stedmann Pharma Ltd **(2006)**

Chemo Mechanical caries removal agent

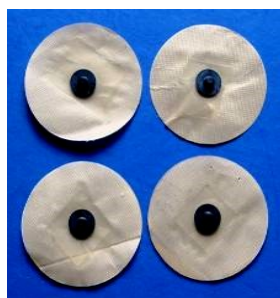


The two component chemo mechanical caries removal agent is mixed into a gel and then applied to the decayed tooth. The gel softens the hard decayed material so that it can be partially removed with hand instruments. D-Solv removes only the non-remineralisable layer of dentine caries without affecting the remineralisable layer. minimizes use of the dental drill, it is the best option for patients who are anxious about drilling procedures, especially children.

Transferred to :

- Dr .Toms Laboratory, Calicut. **(2008)**
-
-

ECG electrodes



Electrocardiography (ECG) is the process of recording the electrical activity of the heart over a period of time using ECG electrodes placed on the skin. These electrodes detect the tiny electrical changes on the skin that arise from the heart muscle's electrophysiologic pattern.

- Transferred to : Lakshmi Technologies Pvt Ltd, Coimbatore **(2008)**
-

Hydroxyapatite and bioactive composites for dental and orthopaedic applications [RELICENSING]



Hydroxyapatite derived materials are used as synthetic bioactive graft for orthopaedic applications due to their molecular structural and compositional similarity with the mineral part of the bone. Porous granule form of hydroxyapatite is a general purpose synthetic bone graft material.

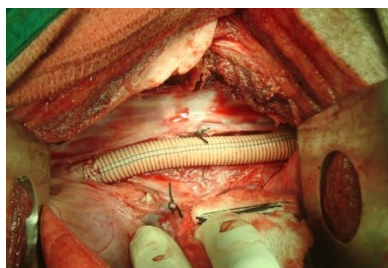
The bioactive composites are a new generation ceramic composites based on hydroxyapatite used for various dental and orthopaedic applications.

There are different variants of the product like hydroxyapatite porous granules, graded porosity buttons for burr-hole closure, ceramic spacer for vertebral laminoplasty, bioactive composite blocks for iliac crest repair, bioactive composite porous blocks and rods etc. In this technology basket, 6 product know-how were transferred.

Transferred to :

- IFGL Refractories Ltd, Kolkatta (2011)

Vascular Graft – Second generation



This is the new-generation Fluoropassivated and Hydrogel Sealed Large Diameter Vascular Graft .

Fabric grafts need pre-clotting with patients' blood. For pre-clotting, collection of patient's own blood before surgery is essential. There is a possibility of residual clot formation, hemorrhage, additional surgery and blood transfusion. A sealant avoids the need of preclotting of vascular graft. A sealant was coated on the graft that restrict the blood seepage through graft walls immediately after implantation & degrade once the purpose is served. This brings about reduced thrombogenicity and improved healing behavior.

- Joint R&D by : TTK Healthcare Ltd, Thiruvananthapuram

Mechanical Heart Valve - Second Generation)



The second generation model TTK Chitra Heart Valve TC2 has the following improvements:

Better minor orifice flow

MRI compatibility

Enhanced thrombo-resistance

The product is ready for multicentric clinical trials

- Joint R&D by : TTK Healthcare Ltd, Thiruvananthapuram