



Lab to Tab™

ACCESS TO INTERESTING BIOSCIENCES STORIES FROM YOUR TAB
A HiMedia e-Newsletter

HiMedialaboratories™ e-Newsletter Volume-5 | June 2017 Issue



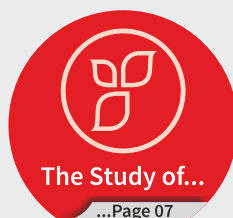
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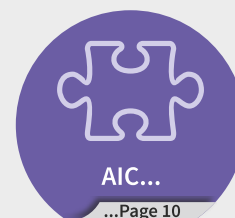
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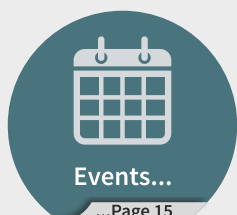
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Message from CEO



G. M. Warke

Dear Friends,

Man and the microbe have had a long standing love and hate relationship on this planet.

Microbe interacts with man in many ways and plays a paramount role in shaping human destiny. HiMedia has dedicated itself to taming this mini-monster and employing it to improve the quality of life on earth. Being in the field for more than four decades, HiMedia has empowered scientists in meeting the challenges of detection, identification, enumeration, inhibition and growth of microbial cultures through various in-vitro techniques. My team has taken pride in serving you with the fruits of our cutting edge research, and we are very happy to offer you persistently TSE/BSE and GMO free chemically defined media, as well as several rapid testing kits today, to achieve your objectives.

I am also privileged to draw your attention to the importance of our stem cells and primary cells research. Human embryonic stem cells of Indian origin, with traceability are offered to scientists and researchers to further their research objectives. At HiMedia we have an invaluable bank of these cells, their respective media, growth factors and the requisite reagents and plastic ware to further your research.

Green revolution of 1960's brought dawn to the industrial agriculture. However this productivity didn't sustain for long. It started showing negative effects on cost of crop production, productivity measurements and farm enterprise budget. Uncontrolled use of chemical fertilizers and pesticides led to contamination of water bodies. Warkem Biotech understands the exact need of sustainable agriculture and has focused on innovation and manufacturing of highest purity genotypically confirmed and potent Non-Toxic BioPesticides, BioNematicides and BioFertilizers not only reducing the total reliability on toxic chemical pesticides, fertilizers etc., but also increasing productivity and improving overall soil health.

Enjoy more about these in the articles ahead and write to us at info@himedialabs.com or techhelp@himedialabs.com

FOUR DECADES. ONE BIG STORY OF EVOLUTION.

Evolution of Microbiology Media over the Four Decades at HiMedia

WHY IS MICROBIOLOGY ESSENTIAL?

Prokaryotic and Eukaryotic microorganisms dominate life on Earth with respect to the number of individuals and biomass. The morphological diversity in the microbial world is much smaller than that of the higher plants and animals. Based on their modes of energy generation and the variety of compounds, the microbial world and especially the world of the Prokaryotes, has many more possibilities than are realized by macroscopic animals and plants.



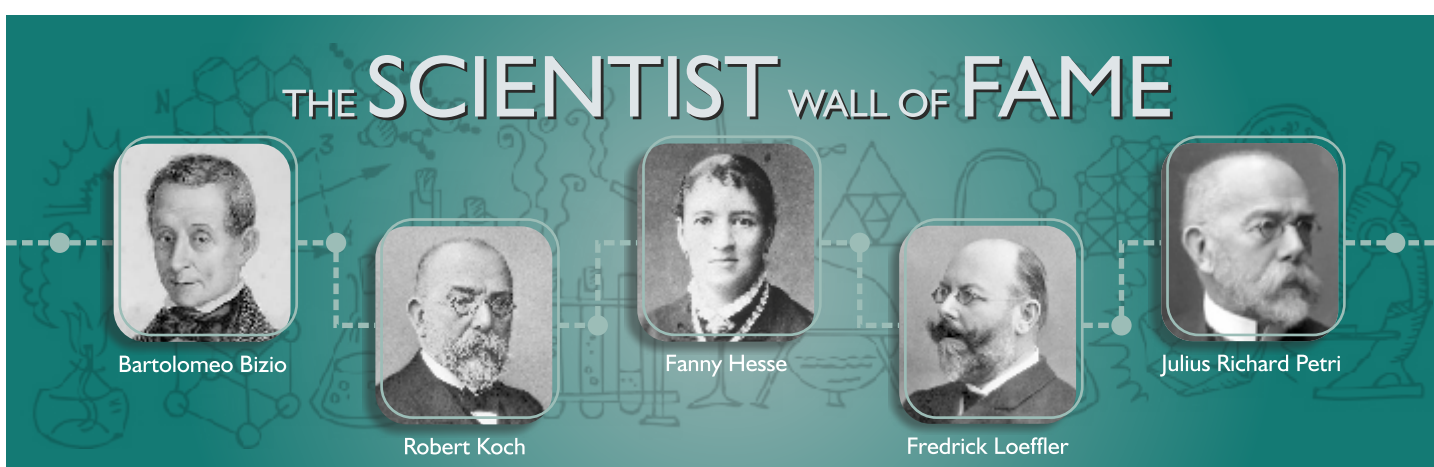
Compatible Nutrients, essential Gaseous atmosphere and adequate Temperature (NGT) constitute the three simple prerequisites for microbial growth, analogous to Food-Clothing-Shelter for us. Beyond this analogy, there is huge diversity in microorganisms with respect to the specific needs to get their NGT. The variables comprising this NGT are pH, water activity, osmolarity, oxygen, temperature, organic-inorganic media constituents and sometime presence of very complex carbon sources such as vitamins and peptides etc.

History of Microbiology Media

Success of any microbiological experiment depends on growth of cells in various media. There was a time when two key advances were required for the field of microbiology to evolve. The first was a sophisticated microscope and the second was a method for rearing (culturing) microorganisms.



Louis Pasteur was a pioneer who used culture medium for growing bacteria in his laboratory for the first time in 1860's. This medium consisted of yeast ash, sugar and ammonium salts.



The Italian biologist, Bartolomeo Bizio, whose work preceded Koch's by 50 years was possibly the first to attempt to grow an organism on a solid medium, using bread as substrate.

Robert Koch (1843-1910), also known as the father of culture media had his first success in bacteriology when he managed the isolation of the bacterial species *Bacillus anthracis*. This was the first time that any pathogenic organism had been isolated and studied outside of the host's body. In 1881, Koch introduced use of Gelatin as solidifying agent for medium.

In late 1881, Fanny Hesse used agar as solidifying agent in Robert Koch's Lab. In 1884, Fredrick Loeffler added peptone and salt to Koch's basic meat extract formulation. In 1887, Julius Richard Petri, another worker in Koch's laboratory, modified the flat glass plate and produced a new type of culture dish for media to avoid contamination and ease of storage and stacking. By the 1890s the culture media we know today, with petri dishes, peptones and agar, were developed. Later several diagnostic, selective differentials, enrichment etc. type media were developed over many decades.

Some of the major milestones in this evolution process are:

2016



HiMedia received the grant for the patent for preparation Chromogen Disc

2014-15



Matched the global demands and cutting edge technologies in media by adopting granulated format of the media mixture. The **Granulated™** media has a superior flow property, higher bulk density, uniformity and controlled aerosol formation which ensures safety.

2010-11



Animal cell culture media introduced

2004-05



HiMedia introduced **HiVeg™** Media - 100% animal free media manufactured from plant origin and plant extracts after comprehensive research.

2002-03



HiMedia introduced biochemical kits to ease identification and make it more convenient.

1998



HiMedia started providing plant tissue culture media in the dehydrated form.

2015-16

HiMedia successfully developed and launched chemically defined microbial media (**HiCynth™**), which are free of TSE/BSE/GMO risks.



2013-14

For higher reproducibility and ease **HiMedia** introduced premeasured Encapsulated Media in Gelatine capsules.



2009-10

HiMedia commenced Harmonized culture media to comply various pharmacopeia.

USP / EP / BP / JP HARMONIZE



2003-04

A golden page in the history of **HiMedia**. During this **HiVeg™** Peptones from vegetable proteins, completely free of animal origin nutrients were introduced. This provided a wide choice to our diverse customers base.



Since launch in **1998**

Chromogenic media are leading the markets.



1996

"Ready prepared media" was introduced and well received.



Since **1975**



HiMedia has remained at forefront of assisting microbiological work by providing essential culture media and ingredients in dehydrated powder forms. It has also provided a wide range of customer specific formulations for diverse industries which include clinical, food, pharmaceuticals, environmental care, cosmetic, agro, dairy, water sanitation and other healthcare industries.

Research & Development



Patent No. 274645 has been granted by Patent Office of Government of India in August 2016 for **"Process for Preparation of Chromogen Disc"**.

Corporate Social Responsibilities

At HiMedia we believe in enriching the quality of life of the communities we live and work with. We have initiated several programs that are focused on the empowerment of people on social as well as economic levels.

Ishavidya is one such endeavor we support that works towards raising the level of education and literacy among underprivileged children. HiMedia has also donated a fully functional State-of-the-Art 'Skin Regeneration Laboratory' along with training modules, to the National Burns Centre, Mumbai.

'In the service of mankind' is a motto that truly reflects our sincere approach to transform the lives of so many through Life Science research and even otherwise. Success for us goes beyond profit margins; the figure that really denotes our success is the number of lives we have touched and enhanced through our social responsibility endeavours.

FOR LIFE IS PRECIOUS...



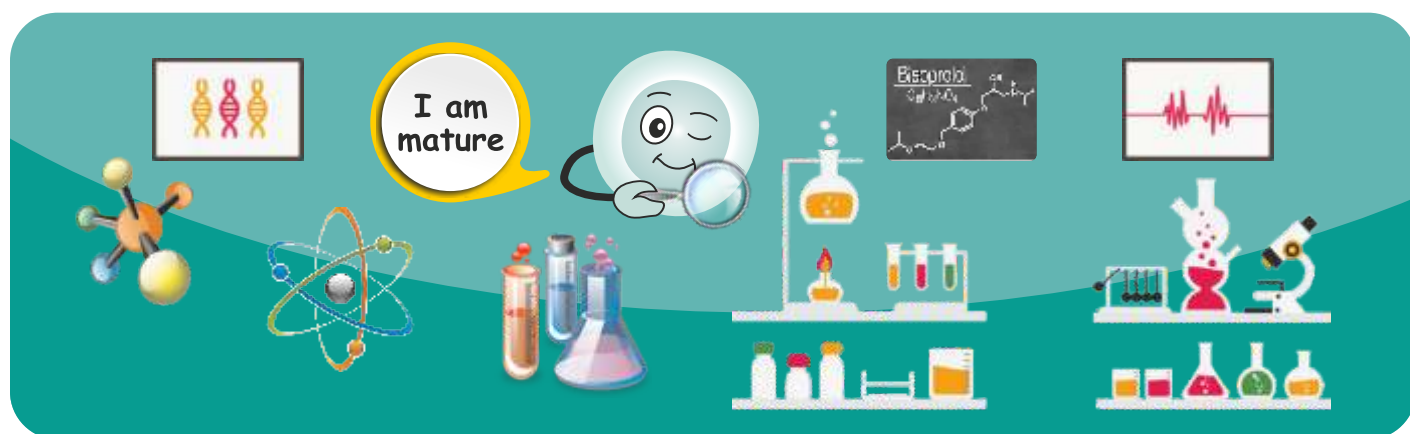
Education for the Underprivileged Children



National Burns Centre Laboratory

THE STUDY OF PLURIPOTENT STEM CELLS

It's Mature. It's also the Future.



PLURIPOTENT STEM CELLS (PS CELLS)

Prevalent for their immense ability of self-renewal the Pluripotent Stem Cells (PS cells) have the potential to give rise to mature cells in a special tissue with their ability to differentiate. Hence, they are known to be pluripotent cells. Apart from the Embryonic Stem Cells (ES cells), adult cells reprogrammed into induced pluripotent cells (iPSCs) also hold similar characteristics. **For more info:** <https://www.youtube.com/watch?v=uC0fLXdu56g>

As Pluripotent Stem Cells are rarely found in the tissues, their identification and purification must be carefully done before being studied.

For more info: <https://www.youtube.com/watch?v=TZA3QFliteA>

The Bridge between the Bench and Bedside.



Pluripotent Stem Cells play a crucial role in basic research, therapeutics application, regenerative medicine and clinical application. Although practicality of moving from bench side to bed side involves challenging steps, scientists and doctors around the globe are definitely pushing it forwards through their cutting edge research for understanding of the molecular mechanism of stem cell functioning, progress of medical solutions and betterment of human health. **For more info:** https://www.youtube.com/watch?v=ED3jvEVix_s

The Mature Fight in a Calm Way.



They go through
a **lot**, only to
emerge
as winners.

Stem cells are isolated, identified, cultured, characterized and checked for their differentiation properties in basic research.

For more info : <https://www.youtube.com/watch?v=WSouJ2Kv5wg>

To reach appropriate therapies, stem cells have to undergo preclinical studies, which primarily involves three steps. Firstly, cells of interest are subjected for the evaluation of infusion, homing and regenerative abilities in appropriate animal model. Secondly, mode of action lying under the treatment is studied. Thirdly, methods are developed for mass production and cells are stored for clinical trials. In the end, clinical trials are performed which evaluate safety, route of administration to patient and the efficacy of the treatment as per current good clinical practices (GCP) guidelines.

For more info : <https://www.youtube.com/watch?v=X45CDIIntuc>

Despite the challenges mentioned above, stem cells continue to expand their territory in therapeutic and clinical applications. In this article, we summarize the progress of these applications of stem cells in last scientific year, 2016. When we consider these applications, ES cells and iPSCs mostly are the game changers.

THERAPEUTIC AND CLINICAL APPLICATIONS

The journey of iPSCs started from understanding Yamanaka-transcription factors that together changed mouse somatic cells in a way to have properties like embryonic stem cells called iPSCs. The advances in research of last decade in reprogramming somatic cells have brought iPSCs in light for their use in regenerative medicine, drug discovery, disease modelling and stem cell based therapy.

For more info : <https://www.youtube.com/watch?v=PWG6HkhOsA0>

For more info : <https://www.youtube.com/watch?v=8JTw2RpDo9o>

1. iPSC derived 'retinal pigment epithelial' RPE cells are being studied for its clinical application for the treatment of age-related degeneration (AMD) in which central vision is blurred creating difficulties in straight-headed activities.
2. Natural Killer (NK) cells were proved to be significantly effective for treating ovarian cancer. In a recent study, natural killer cells isolated from peripheral blood and those derived from iPSCs were compared for tackling ovarian cancer in mouse xenograft model. These NK cells were introduced in mouse model via intraperitoneal injection. In the survival comparison, mice with iPSCs derived NK cells improvised the viability from 73th day to 97th day. Thus, potential of iPSCs of being able to differentiate into NK turns out to be innovative way of treatment in ovarian cancer. For evaluation of therapeutics products ESCs, 13 studies are in clinical trials in 2016.
3. Luo J. and his group performed studies on stem-graft in myocardium of animal model. Reprogrammed stem cells were hypothesized to be best suitable for repairing myocardium that is chronically damaged. After going through 10 years of preclinical and translation studies Menashe P. and his group files the first clinical case report where for severe heart failure treatment, effective use Human ESC derived cardiac progenitor cells is elaborated.

4. Hematopoietic stem cells (HSCs) which are traditionally retrieved from bone marrow can now be obtained from peripheral blood and umbilical cord blood (CB). HSCs are under clinical trials majorly in the field of neurological disorders, including cerebral palsy, autism, hypoxic-ischemic encephalopathy, stroke, and hearing loss.
5. Monogenic disorders (MGD) are disorders caused by single gene mutation and causing ill-effects on human health. There are no treatments available for MGD, however patient-derived stem cells can provide promising treatment for MGD. Simple and effective gene editing tools like RNA-CRISPR/Cas9 have corrected genes in MGD patients using specific iPS and adult stem cells. Shwank et. al. has found that stem cell with single gene corrected for the mutation, is able to proliferate and form organoids.

Ending Challenges. Starting Creation.



Before complete acceptance of stem cell based therapeutics and their clinical applications, critical evaluation of these methods comes into picture, as the stem cells of interest maintained in vitro bear chances of high karyotype abnormalities. Even these cells population can lose its heterozygosity posing serious threat to individual. To abolish such variations and alterations happening within the cell population, screening procedure needs to be followed strictly.



HiMedia's role stepped into the market of stem cells and primary cells since last decade with the aim of providing high quality and pure cell lines of Indian genetic pool for Indian scientist at affordable rate and thus, helping scientists omitting their first step of isolation of cells in basic research. HiMedia has large number of media for different cells lines and also provide media in customized formats. For more info log on to www.himedialabs.com

Autism Intervention Centre

Inaugurated by
HiMedia

Autism Intervention Centre opened at Sion Hospital, Mumbai in December 2016 in collaboration with HiMedia.

The Autism Intervention Centre (AIC) has been conceptualized by Dr. Mona Gajre, Professor of Pediatrics and Incharge of the Pediatric Neurodevelopmental Centre and Dr. Mamta Manglani,

Professor and Head of the

Department of Pediatrics from Sion Hospital. Dr. Mona Gajre, Incharge of the Pediatric Neurodevelopmental Centre, said, "Till now the autistic children were getting diagnosed here.

The treatment was available here in Sion, but in different departments and not under one roof. AIC will provide all the existing therapies, and some other therapies which were not available like speech therapy, counselling and group and social skills, under one roof. The centre is funded by Warke's HiMedia Laboratories through CSR activities."



Mumbai Marathon 2017

HiMedia Participated in the 40th Marathon



HiMedia participated in the 40th Mumbai Marathon 2017 with 180 employees. Amongst which, one completed full marathon and 12 completed half marathon.



Award Ceremony for our Marathon runners.



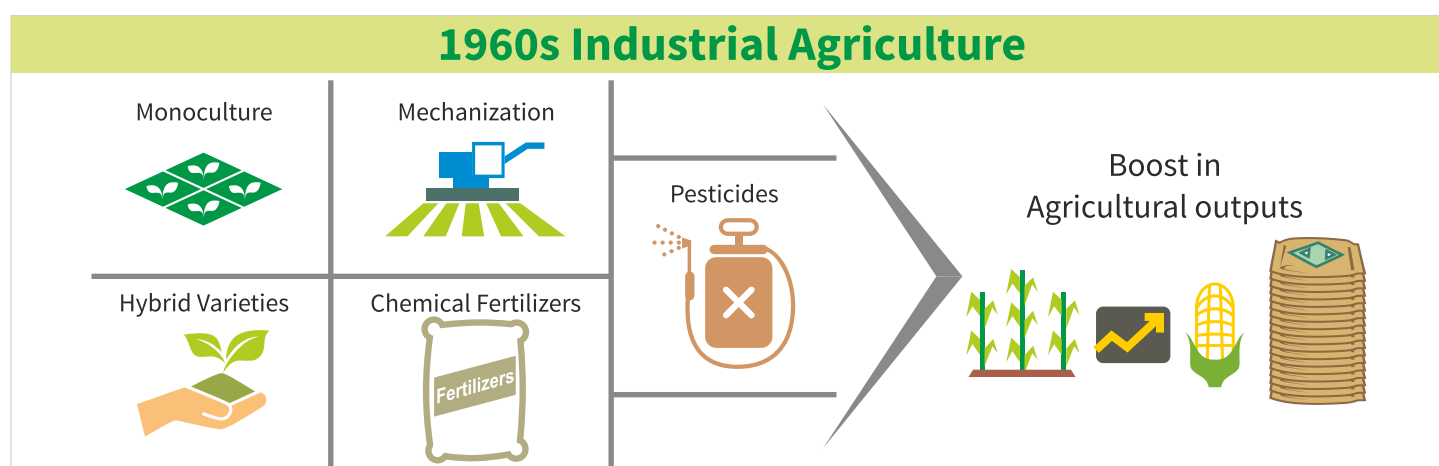
SUSTAINABLE AGRICULTURE



Sustainable is derived from Latin word 'Sustinere' (Sus – from below and tenere – to hold) to keep existence or maintain long-term support or permanence. Sustainable agriculture uses the principle of Ecology and studies relationship between organisms and their environment, which in turn helps in conservation. It ensures economic viability of farm operations, enhances productivity with improved nutritional value of yield and upgrades the quality of life for the farmer and the society as a whole.

LET'S REWIND TO TWO DECADES AFTER OUR INDEPENDENCE.

- The decade that brought dawn to the "Industrial Agriculture" and paved way for crops grown in monoculture, with new hybrid varieties, mechanization of agricultural practices, use of chemical fertilizers and pesticides.
- Farmers saw a tremendous boost in agricultural productivity.



- Industrial agriculture lacks in sustenance and longevity.
- Such agricultural practices with excessive fertilizers and pesticide application adversely affected the soil quality, physico-chemical properties through soil erosion, compaction, acidification, salinization, and none-the-less biological health of the soil.
- However uncontrolled use of agricultural fertilizers and pesticides led to contamination of water bodies such as ground water, wells, streams, rivers etc.

In short, chemical based industrial agriculture completely depends on non-renewable energy sources especially petroleum which cannot be sustained indefinitely, depleting natural resources and polluting environment.

WARKEM BIOTECH AND SUSTAINABLE AGRICULTURE

- ★ Warkem Biotech Pvt Ltd understood the exact need of sustainable agriculture and started innovating, discovering and manufacturing products not only reducing the total reliability on toxic chemical pesticides, fertilizers etc. but also increasing productivity and improving overall soil health.
- ★ Misconception is that organic farming is more expensive than chemical based farming.
- ★ Warkem Biotech changed the world of agriculture with a revolutionary holistic approach of Organic and Chemical Free products that are Reliable, Easy-To-Use, Non-Toxic and Biodegradable.
- ★ This mission lead to the development of products that are "Best in Class"



- Biostimulant
- Organic Soil Conditioners



- Biofertilizers



- Biopesticides
- BioNematicides



- Soil & Leaf Testing kits
- Insect Sticky Traps

- ★ Warkem with its highly potent range of agri products allows farmers to do Low input-High output Agriculture.

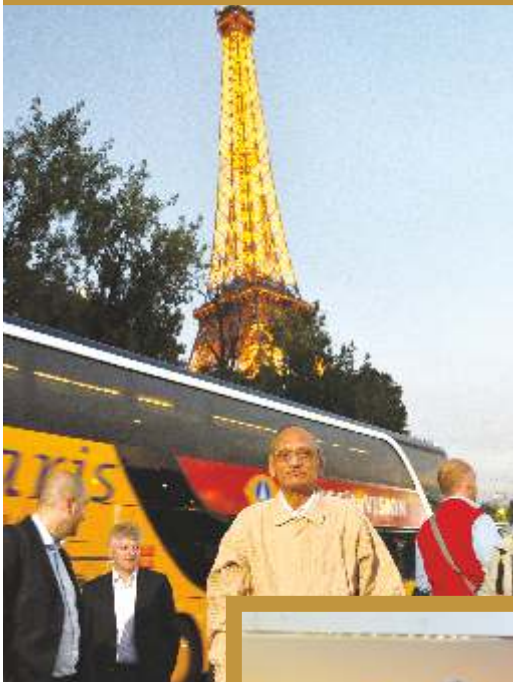
HERE ARE WARKEM BIOAGRI SOLUTIONS FOR SUSTAINABLE AGRICULTURE.

Testing Kits	<ul style="list-style-type: none">• Soil Testing Kit Macro-Elements (WA194) - pH, Organic Carbon, Macro-elements (Nitrogen, Phosphorus, Potassium)• Soil Testing Kit Micro-Elements (WA195) - (Zinc, Manganese, Molybdenum, Iron, Boron and Copper) pre and post harvest. The evaluated result can be interpreted using free, unique, user friendly software at our website http://www.warkembioagri.com/App/NPKReq.html• Soil Testing Kit Secondary Nutrients (WA213) - (Calcium, Magnesium, Sulfate and Chloride)• Soil Texture Kit (WA216) helps in evaluating soil texture• Plant Tissue Kit Macro-Elements (WA214) Evaluate plant tissues for Macro-elements (Nitrogen, Phosphorus, Potassium) and Plant Tissue Kit Micro-Elements (WA215) Evaluate plant tissues for Micro-elements (Zinc, Manganese, Iron, Boron and Copper) during crop growth phase.
Biostimulant Organic Soil - Conditioners	<ul style="list-style-type: none">• HiFoliar Nutrient™ (W180), an amino acid based foliar biostimulant helps crops to overcome stress.• Soil Orgainc Supplement (WA301) and HumiKure (WA307) are biogeochemical cycle based products which acts as soil conditioners thus improving physico-chemical properties of the soil.
Bio-Fertilizers	<ul style="list-style-type: none">• SuperPhoSol (WA302), SuperPotSol (WA303), SuperNitro (WA309) are micro-organisms namely <i>Pseudomonas</i> spp., <i>Frateruria</i> spp. and <i>Azotobacter</i> spp. based products that helps in solubilizing, mobilizing and fixing Phosphorus, Potassium and Nitrogen from soil and environment into the crops.
Biopesticides	<ul style="list-style-type: none">• SuperRooTric (WA304), SuperPhoSol (WA302) and SuperBacPlus(WA307) are biofungicides namely <i>Trichoderma</i> spp., <i>Pseudomonas</i> spp. and <i>Bacillus</i> spp.• SuperStar (WA305), SuperVinashak (WA310) and SuperGhatak (WA311) are bioinsecticides namely <i>Verticillium</i> spp., <i>Metarhizium</i> spp. and <i>Beauveria</i> spp. that protects crops from plant infesting pests.• SuperKiller (WA308) is a bionematicide namely <i>Paceliomyces</i> spp.
Adjuvants	<ul style="list-style-type: none">• SuperStiker (WA306) is silicon based non-ionic biodegradable wetting agent.
Integrated Pest Management	<ul style="list-style-type: none">• Sticky Pads - GlueePad Yellow (WA319) and GlueePad Blue (WA320) to monitor and control insects• Sticky Rolls - Yellow catch bug (WA323) and Blue catch bug (WA324)



HiMedia in Europe

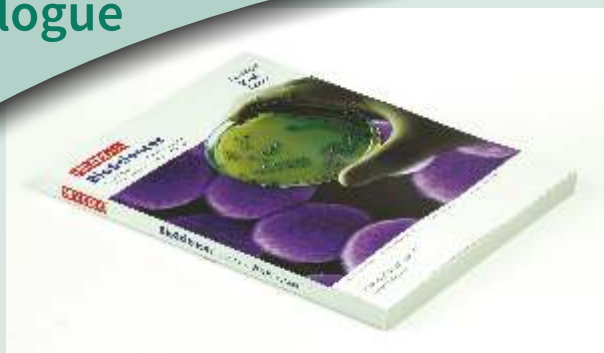
HiMedia - 1st European Seminar



▼ HiMedia's agents across 22 countries participated in the first European Seminar in Paris.



HiMedia - Europe Catalogue



We thank you for your interest in HiMedia Europe's product range. The current European Catalogue can also be obtained by writing to us at infoeu@himedialabs.com

HiMedia - Europe Warehouse



HiMedia proudly announces the creation of a logistics base and warehouse in Europe. With very soon a stock of more than 1,000 available products. This investment will enable HiMedia to supply a wide range of media and reagents within a couple of days through a large network of distributors.

EVENTS

Other Events

Jul 17

17 Jul 2017 - 21 Jul 2017

IUMS 2017

Singapore

Venue: Marina Bay Sands Convention Centre,
Singapore

Stand No.: B - 18

Nov 13

13 Nov 2017 - 16 Nov 2017

MEDICA-2017

DUSSELDORF

GERMANY

Stand No.: 3D36

Aug 22

22 Aug 2017 - 24 Aug 2017

CPHI KOREA 2017

SEOUL

Venue: COEX Korea Exhibition Center, Seoul,
South Korea

Stand No.: H 05

Nov 28

28 Nov 2017 - 30 Nov 2017

CPHI INDIA -2017

MUMBAI

Venue: Bombay Exhibition Centre, Mumbai,
India

Stand No.: I 61

Sep 26

26 Sep 2017 - 28 Sep 2017

Analitica Latin America 2017-

Brazil

Venue: Transamerica Expo Center, São Paulo,
Brazil

Stand No.: H30

Apr 04

04 Apr 2018 - 06 Apr 2018

LAB INDONESIA 2018

Venue: Jakarta Convention Center, Jakarta,
Indonesia

Stand No.: N 19

Oct 10

10 Oct 2017 - 12 Oct 2017

LAB ASIA 2017

KUALA LUMPUR

MALAYSIA

Stand No.: 4B G 02

Jun 11

11 Jun 2018 - 15 Jun 2018

ACHEMA 2018

FRANKFURT

GERMANY

Oct 24

24 Oct 2017 - 26 Oct 2017

CPHI FRANKFURT -2017

GERMANY

Venue: Messe Frankfurt, Ludwig-Erhard-
Anlage, 60327 Frankfurt a. M., Germany

Stand No.: 4.2 B 33

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