

C36 Turnitin L. R. Telly Savalas

by Lalu Rudyat Telly Savalas C36

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2nd ICST 2017

THE EMERGENCE OF
SCIENCE FOR HUMAN
PROSPERITY AND HEALTH

Joint International Conference on Science and
Technology in The Tropic

Organized by:
University of Mataram, Indonesia and University of Malaya, Malaysia

BOOK OF ABSTRACTS

AUGUST 23rd-24th 2017

UNIVERSITY OF MATARAM



UNIVERSITI
MALAYA



THE EMERGENCE OF SCIENCE FOR HUMAN PROSPERITY AND HEALTH

**JOINT INTERNATIONAL CONFERENCE ON SCIENCE AND TECHNOLOGY IN THE TROPIC
UNIVERSITY OF MATARAM, AUGUST 23rd-24th 2017**

PREFACE

Bismillaahirrahmaanirrahiim
Assalaamu'alaikumwarahmatullaahwabarakaatuh.
Peace be upon us.

Praise always we pray to God Almighty for giving us the abundance of grace, guidance and inayah, so that we all can meet here in the “2nd International Conference on Science and Technology (ICST) 2017”. The theme of this conference is “The Emergence of Science for Human Prosperity and Health” where this conference is joint international conference between Mataram and Malaya University.

First of all, I would like to welcome you all to West Nusa Tenggara Province specially Lombok Island, “the Island of Thousand Mosques”, which is famous to its many natural resource and beautiful tourism destinations where you can enjoy them while attending the conference. This conference will be held for two days, from 23rd to 24th August 2017, and took place in campus of the University of Mataram.

So far, we received one hundred fifty papers from various universities and research institutions in Indonesia and from overseas. The paper have been selected and grouped based on the similarity of the research field, which then are presented and discussed. Presentation of the papers will be held in seven parallel classes and poster presentation. The Selected papers will be published in Malaysian Journal of Science (Special Issue) which index by Scopus, and the rest will be published in the Conference Proceedings. Additionally, selected paper in aquaculture have the opportunity to be published in Jurnal Akuakultur Indonesia.

At this moment, the organizing committee would like to express our gratitude to all of you for your participation on this conference,

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especially to the all keynote speakers, presenters who have submitted for both oral and posters presentations and also to all participants. Our special gratitude also goes to the Rector of the University of Mataram and Vice Chancellor of Malaya University, who have been highly supporting this conference. Critics and suggestions on the implementation of this conference will be appreciated and as much as possible we will improve the next ICST. Last but not least, the organizing committee would like to thank to all of you who have supported this conference.

Have an enjoyable conference.

Wassalamu'alaikum warohmatullahi wabarakatuh.

Chairman of 2nd ICST 2017

Dr.rer.nat. Lalu Rudyat Telly Savalas, M.Si.



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OPENING SPEECH - RECTOR THE UNIVERSITY OF MATARAM

The 2nd International Conference on Science and Technology 2017

**Joint International Conference on Science and Technology
in The Tropic Beetwen Mataram and Malaya Universiti**

Respected Guests,
Keynote speakers,
Conference participants,
and all other participants.

On Behalf of all staffs of the University of Mataram, I welcome you all to Lombok, a beautiful island in West Nusa Tenggara Province, where the University of Mataram is located. Lombok is known for its natural and cultural diversity where you can enjoy traditional cuisines, beaches, waterfalls, mountain, traditional villages and handicraft of many ethnics including Sasak, Samawa, Mbojo, Balinese, Chinese, Arabic, and many others.

As the Rector of the University of Mataram, it is a great honour for me to address the opening of "The 2nd International Conference on Science and Technology" here at the University of Mataram, which will be held from 23rd to 24th August 2017, with a theme "The Emergence of Science for Human Prosperity and Health". The main aim of this seminar is to gather scientist from all over the world to share their ideas, knowledge and experiences and to build network for possible future collaboration.

As we are aware that sharing knowledge and experiences from speakers are extremely valuable in a conference, therefore I would like to express my high appreciation, first, to the keynote speakers from overseas and from Indonesia for their willingness to come to Lombok to share their acknowledged works. Your effort and contribution to this conference are absolutely valuable. Second, my high appreciation also

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goes to the national speakers and all other participants, including the speakers from University of Mataram and local universities in West Nusa Tenggara Province, your participation in this conference not only will give incredible share of ideas, skills and knowledge that you have, but also will improve the academic environment that we are developing in this university. I hope this conference will be a good forum, not only for communicating and sharing ideas, knowledge and experiences, but also for building networking for future collaboration.

I would also like to take this opportunity to express my appreciation to the sponsors which have given some contribution to this conference. Last but not least, I would like to thank the organizing committee as well as all other supporters and participants, without their effort, commitment and hard work, this conference will not run well.

Finally, I wish you most successful conference, enjoy Lombok Island and hope to see you again in other forum here at the University of Mataram.

Rector of the University of Mataram

Prof. Ir. Sunarpi, Ph.D .



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KEYNOTE SPEECH

The Use of "OMIC" Technologies in Understanding the Response of Microalgae towards Various Abiotic Stressors

Phaik-Eem Lim^{1*}, Sze-Wan Poong¹, Siew-Moi Phang^{1,2}

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ABSTRACT Global climate change has been in the forefront of the various current environmental issues. Reports have shown that our environment is adversely affected by global warming, increased ultraviolet radiation (UVR) especially UVR-B, ocean acidification and heavy metal pollution among others. Phytoplankton plays an important ecological role as the primary food producer and forms the basis of food webs, hence any changes to their size and composition will affect the whole ecosystem. Hence, it is essential to understand the responses and adaptations of microalgae towards the various environmental changes. Many studies have been conducted on the microalgal physiological changes in response to stress but there are very limited studies on understanding their response and adaptation at the molecular level. With the advent of "omic" technologies such as the availability of various platforms of next generation sequencer, has enabled a high-throughput understanding of gene expression patterns which can be applied in our quest to understand the stress-induced physiological responses at the molecular level. In this talk, examples of our studies on the response and adaptation of microalgae to various abiotic stressors such as elevated temperature and UVR, will be discussed from a physiological (photosynthetic efficiency via Pulse Amplitude Modulated Fluorometry, pigment content and changes to the biomass) and molecular (via omic technologies such as transcriptomics and metabolomics) point of view.

(Keywords: Microalgae, abiotic, stressors, Omic technologies, climate change)

The Distribution Patterns and Reference Conditions of Marine Species Richness in Chinese Coastal Waters

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ABSTRACT More than 28000 marine species have been recorded in China, which accounts for about 11% of all marine organisms in the world and plays a potentially important role in protecting global marine biodiversity. Although lots of marine investigations have been carried out every year, knowledge of distribution patterns and reference conditions of marine species richness is limited in China on the national scale. In this study, nation-scale species diversity patterns and reference conditions were examined on the basis of several nationwide investigations. The distribution patterns and reference conditions of marine species richness in Chinese coastal waters in this study include: (1) spatially, species richness in the subtropics was significantly larger than that in temperate zones, and species richness was significantly different among four latitudinal regions, Bohai Sea, Yellow Sea, East Sea and South China Sea; (2) species richness and bay areas were significantly correlated and followed power law relationships; (3) there were significantly positive correlations of species richness among phytoplankton, zooplankton and benthic macrofauna. The findings provide new insights to conservation biology in the marine environment, and also are fundamental for future studies of biodiversity and the impact of development on biodiversity.

(Keywords: diversity patterns, reference conditions, marine diversity, species-area relationship)

Zoning of Marine Ecological Redline - an Implement of Marine Spatial Planning in China

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ABSTRACT To enhance the ecosystem based management, the State Council of China implemented the ecological red lines (ERL) strategy as the national strategy for ecological environmental protection. As a type of marine spatial planning, marine ecological red lines (MERL) defines the important ecological function area, ecological sensitive area and ecological vulnerable area as the controlling area, within where strict protection policies are conducted. An approach for rapid evaluation of MERL was proposed, based on studies in marine ecological function assessment and marine ecosystem vulnerability assessment. The MERL evaluation system was consisted of series of indicators with a ranking system, to interpret the different priorities of protection. According to the evaluation results coastal areas can be divided into different grades. The first grade redline areas were suggested to be managed as forbidden development zones while the second grade redline areas would be managed under policy of restricted development. In this study Fujian province was taken as an example to show how the MERL zoning process works, and the MERL proposal of Fujian was also the first approved by State Oceanic Administration of China.

(Keywords: marine spatial planning, ecological redlines, ecosystem based management)

Long-term Impacts of The 1257 CE Eruption of Samalas Volcano in Lombok Island

Franck Lavigne

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Geography, Meudon, France

The 1257 CE caldera-forming eruption of Samalas (Rinjani volcanic complex, Lombok, Indonesia) was recently associated with one of the world's largest eruptions of the Holocene period, which is described in the local written sources (namely Babad Lombok and BabadSuwung). This four-phase continuous eruption produced up to 40 km³ dense rock equivalent (DRE) of deposits, mainly composed of pumice (*batuapung*, locally known as *batukumbung*). This volcanic rock consists of highly vesicular rough textured volcanic glasses, that was emplaced, either by plinian fallout (7-9 km³ DRE) or by pyroclastic density current (PDC) (~16 km³ DRE), or by post-eruptive lahars.

The volcanic products of the 1257 eruption of Samalas provide the main source of mineral resource in Lombok. Thick PDC deposits up to 50 m are found in North Lombok, West Lombok (Sedau) and East Lombok. Pumice quarries are extensively exploited in Lombok since the 1980's. The pumices of good quality are exported mainly to Asia (China 68%, South Korea 7.2%, Vietnam 5.5%) as a building material and as an abrasive material. Secondary deposits, i.e. post-eruptive lahar (pumice-rich hyperconcentrated flows) and fluvial sand mixed with pumice fragments, are mainly exploited in East Lombok (e.g. Ijobatit, Korleko). They are mainly used for local constructions and roads.

Another advantage of the quarrying activity is the removal of the pumice and volcanic sand, which are both poorly fertile and not suitable for ricefields due to their high permeability. Slowly but surely, the rice fields are therefore in an expansion phase in Lombok, insofar as they progressively replace the pumice and sand quarries.

1. Objective

We are proposing a collaborative study between Laboratoire de Géographie Physique (LGP) UMR 8591, CNRS, France and Indonesian colleagues from Faculty of Geography, Universitas Gadjah Mada (UGM) Indonesia to define what are the impacts of pumice exploitation on human as well as on the environments. We are proposing a study that will have the following specific objectives:

- 1) To build and complete a database on the exploitation of pumice from Samalas eruption, such as the location, deposit's thickness, number of workers, etc.;
- 2) To calculate the direct economic impacts caused by pumice exploitation;
- 3) To reconstruct the impact of pumice exploitation activity on human health, such as lung disease (silicosis);
- 4) To reconstruct the environmental impact of pumice exploitation, e.g. to agriculture, water pollution, coral growth, etc.;

Therefore this project matches at least three areas of research of the NUSANTARA call: Human and Social sciences, Health and Medicine, Climate change and the preservation of the environment.

2. Implementation

This collaborative study will be done in two years and will involve PhD students and researchers from both institutions, Laboratoire de Géographie Physique - UMR 8591 and Faculty of Geography, UGM. In the first year, we will focus on the database of pumice exploitation and the impact of pumice exploitation activity on human health. Furthermore, the LGP members will come to Indonesia to join the fieldwork in Lombok. In the second year, we will focus on the environmental and direct economic impacts of pumice exploitation. In the middle of second year, the member of Faculty of Geography UGM will stay at LGP as a visiting professor.



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3. Middle to long term expected impacts

In the middle term, considering the impacts of exploitation of pumices to health, environment, and economic, a better understanding of what is currently happening in the rivers downstream of Samalas complex volcano can inform public policy with respect to regulate or manage the exploitation of pumices.

In the long term this understanding can guide land-use planning downstream from this volcano and elsewhere. Furthermore, this study will have direct application to health study, human and social sciences, as well as environmental study, especially on environmentally sustainable exploitation by developing and integrating practices that reduce the impact of exploitation of pumices on human and environmental. These practices include measures such as environmental leading practices, community engagement and support, economic development, safety excellence, and optimum resource utilization. Results of our study could assist Indonesian officials in public policy decisions with regard to whether or not to give permission to exploitation of pumices in the rivers downstream of Samalas complex volcano.

4. Output/Deliverable (joint publications, products, patents, etc)

We expect to write some publications for the whole periods of these researches (2 years) in peer-reviewed international journals such as Geomorphology, Natural Hazards, Natural Hazards and Earth Sciences Systems, etc. We expect to present our results in International congress of major importance especially on Cities on Volcanoes 9, Chile, in November 2016, and the International Conference on Geomorphology in New Delhi, India in 2017.

5. Other benefits (capacity building, socio-economic benefits)

By developing and integrating community engagement and support, economic development, and safety excellence during, we expect

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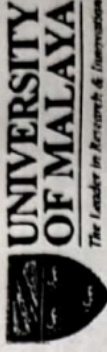
that exploitation of pumices in Lombok can bring economic and so
benefits to communities, through local job creation and resource revenue

French Team:

- Franck Lavigne, Professeur, University Paris 1 Panthéon-Sorbonne
- Kim Boillot-Airaksinen, PhD student, University Paris 1 Panthéon-Sorbonne
- Anne-Kyria Robin, PhD student, University Paris 1 Panthéon-Sorbonne
- Edouard De Bélizal, Junior Lecturer University Paris Ouest Nanterre
- Patrick Wassmer, senior Lecturer, University of Strasbourg
- Giet Clémence, student at the Institut Polytechnique Lasalle Beauvais



Joint International Conference University of Mataram, Indonesia and University of Malaya, Malaysia
INTERNATIONAL CONFERENCE ON SCIENCE AND TECHNOLOGY (The 2nd ICST)
UNIVERSITY OF MATARAM
 Mataram, August 23rd to August 25th, 2017



TENTATIVE PROGRAMME

TIME	AGENDA	MODERATOR	PLACE AND PIC
08.00-09.00	REGISTRATION	University of Mataram Dome (Prof. Sunarpi Building)	
09.00-10.00	Opening ceremony Location: University of Mataram Dome (Prof. Sunarpi Building) Jalan Majapahit 62 Mataram		MC: Nizar
09.00-09.05	Doa	Ir. H. Rasidy, M.Si	
09.05-09.10	Indonesian Anthem	University of Mataram Choir	
09.10-09.20	Welcome Speech	The Chair of Organizing Committee Dr.ret.net. TellySavalas	
09.20-09.30	Opening Speech	Rector University of Mataram Prof. Ir. H. Sunarpi, Ph.D	
09.30-09.40	Indonesian dances and songs	Students of Mataram University	
09.40-10.30	MORNING TEA BREAK & POSTER SESSION		BPPU
10.30 - 12.00	Keynote Speakers Plenary-1 Location: University of Mataram Dome (Prof. Sunarpi Building), Jalan Majapahit 62 Mataram	Moderator: Muhammad Ali, S.Pt., M. Si., Ph.D	
10.30-11.00	Presentation-1 Science	Prof. Ir. H. Sunarpi, Ph.D (University of Mataram, Indonesia)	
11.00-11.30	Presentation-2 Physics	Prof. Dr. Dato' Azizan Abu Samah (University of Malaya, Malaysia)	
11.30-12.00	Presentation-7 Physical Geography	Prof. Franck Lavigne (Universite Paris, France) Long-term impacts of the 1257 CE eruption of Samalalas volcano in Lombok Island	

12.05 – 13.05	Keynote Speakers Plenary-2 <i>Location. University of Mataram Dome (Prof. Sunarpi Building), JalanMajapahit 62 Mataram</i>		Moderator: Prof. Sri Widyastuti			
12.05 – 12.35	Presentation-4 Marine Biology		Prof. Lim PhaikEem (University of Malaya, Malaysia) The Use of "OMIC" Technologies in Understanding the Response of Microalgae towards Various Abiotic Stressors			
12.35 – 13.05	Presentation-5 Oceanography		Dr. Weiwei Yu (Third Institute of Oceanography, China) The Distribution Patterns and reference Conditions of Marine Species Richness in Chinese Coastal Waters			
13.05 – 14.00	LUNCH BREAK & POSTER SESSION					
14.00 – 16.25	PARAREL SESSION <i>Location. Prof. Sunarpi Lecture Building</i>					
	ROOM 1 AGRICULTURE	ROOM 2 MARINE SCIENCE	ROOM 3 NATURAL SCIENCES	ROOM 4 HEALTH	ROOM 5 TECH. & ENGINEERING	ROOM 6 FOOD SCI. & TECH
	Moderator: Dr. Herman Suheri	Moderator: Dr. AluhNikmatullah	Moderator: Dr. TellySavalas	Moderator: Dr. Yunita Sabrina	Moderator: Dr. Syahrul	Moderator: Dr. RienHandayani
14.00-14.10	001_Zainuri	032_Karnan	142_Wildan	129_Parmonangan M	101_M. Ramdhan O	039_Sukmawaty
14.10-14.20	011_IKD Jaya	033_Imam Bachtiar	007_Aris Doyan	013_Hamsu Kardiyan	010_Alex Laplaza	066_Dedy Rahmad
14.20-14.30	119_Hiryana W	045_ZaenalAbidin	009_Norma Ikrama	016_Lina Nurbaiti	110_BuanAnshari	086_SatrijoSaloko
14.30-14.40	047_EkaWidiastuti	051_Muh Risnain	021_Rosalina Ariesta L	018_Idiani Darmawati	027_N Kencanawati	091_Dian Hasni
14.40-14.50	028_Lily Ishak	069_Faturrahman	132_Imam S	029_Sujono	074_Akmaluddin	092_Murna
14.50-15.10	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION
	ROOM 1 AGRICULTURE	ROOM 2 MARINE SCIENCE	ROOM 3 NATURAL SCIENCES	ROOM 4 HEALTH	ROOM 5 TECH. & ENGINEERING	ROOM 6 FOOD SCI. & TECH
	Moderator: Dr. Herma Suheri	Moderator: Dr. AluhNikmatullah	Moderator: Dr. TellySavalas	Moderator: Dr. Yunita Sabrina	Moderator: Dr. Syahrul	Moderator: Dr. RienHandayani
15.15-15.25	002_Taslim Sjah	075_Edi Sulman	008_Susilawati	022_Mitrayana	054_Rudi Walujo	115_Ismed
15.25-15.35	025_Mulyati	099_Abdul Syukur	020_Hikmawati	030_Sri Idawati	058_Marenda Dwi J	121_Cesar W Refdi

15.35-15.45	031_Kusnarta, IGM	114_M Fadlillah	026_Erin Ryantin G	037_Handa Mulasari	113_Ngudiyono	141_Murad
15.45-15.55	040_Rizki Amalia N	122_Novita HN	035_Saprizal H	041_Ardiana Ekawanti	080_Gunawan	124_Wahid Y
15.55-16.05	044_BHKusumo	123_Wiharyani W	036_Zhilal Shadiq	042_Elizabeth CS	120_BuanAnshari	093_Yusya' Abu Bakar
16.05-16.25	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION
AFTERNOON BREAK AND POSTER SESSION						
END OF DAY 1						

DAY 2 - THURSDAY, AUGUST 24th 2017							
08.00-09.00	REGISTRATION	University of Mataram Dome (Prof. Sunarpi Building)					
09.00-10.00	Keynote/Invited Speakers Plenary-3 <i>Location. University of Mataram Dome (Prof. Sunarpi Building), JalanMajapahit 62 Mataram</i>	Moderator: Prof. Ir. I KomangDamar Jaya, M. Sc. Agr., Ph.D					
09.00-09.30	Presentation-6 Science	Prof. Dato'Asbi Ali, Ph.D (Management and Science University, Malaysia)					
09.30-10.00	Presentation-7 Health	Prof. Dr. Akihiro Hazama, MD (Fukushima Medical University, Japan)					
MORNING TEA BREAK AND POSTER SESSION							
10.30-11.30	Keynote/Invited Speakers Plenary-4 <i>Location. University of Mataram Dome (Prof. Sunarpi Building), JalanMajapahit 62 Mataram</i>	Moderator: Prof. Ir. M. TaufikFauzi, Ph.D					
10.30-11.00	Presentation-8 Marine Biology	Dr. Wenjia Hu (Third Institute of Oceanography, China)					
11.00-11.30	Presentation-9 Post-harvest Technology	Prof. Julian Heyes Massey University, New Zealand					
LUNCH BREAK AND POSTER SESSION							
13.00-15.35	PARAREL SESSION <i>Location. Prof. Sunarpi Lecture Building</i>						
	ROOM 1 AGRICULTURE	ROOM 2 AGRICULTURE	ROOM 3 NATURAL SCIENCES	ROOM 4 HEALTH	ROOM 5 TECH. & ENGINEERING	ROOM 6 MIXED TOPICS	Room 7 MIXED TOPICS
	Moderator: Prof. TaslimSjah	Moderator: Dr. Bambang HK	Moderator: Dr. Imam Bachtiar	Moderator: Dr. Made Sriasih	Moderator:	Moderator: Dr. Ihsanawati	Moderator: Dr. L. Zulkifli
13.00-13.10	046_Fitria Z	079_M Sudantha	065_Syamsuddin	050_IA Eka W	056_Warsa	043_Ninieck FP	063_Muhammad Ali
13.10-13.20	017_Liana S	053_Dika S	073_Sri Seno H	060_Mashur	136_CahyoMustiko	057_Ahmad S	064_Muhammad all

13.20-13.30	052_Theresia E	082_Lolita E S	085_Siti Rabiatul F	061_Hamsu K	059_Shafwan A	084_Sitti Latifah	143_SyamsulBahri
13.30-13.40	076_M. T. Fauzi	107_Jauhar F	089_Moh. Liwa	062_Purkan	034_Ahmad Pauzi	067_Indra KS	145_MujiWahyu
13.40-13.50	078_M Sudantha	012_Suwardji	105_Ira Purnawati	072_Nurhidayati	081_Suryawan M	106_Suharti	146_Sapriani H
13.50-14.10	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7
	AGRICULTURE	NATURAL SCIENCES	NATURAL SCIENCES	HEALTH	TECH. & ENGINEERING	TECH. & ENGINEERING	MIXED TOPICS
	Moderator: Prof. TaslimSjah	Moderator: Dr. L. Zulkiffi	Moderator: Dr. Imam Bachtiar	Moderator: Dr. Made Sriasih	Moderator:	Moderator: Dr. CahyoMustiko	Moderator:
14.15-14.25	108_Nani H	126_Abdul S	097_Sri Wahyuni	083_Yunita S	014_Ahmad Pauzi	006_Sirajuddin HA	024_Husni
14.25-14.35	125_I W Sutresna	131_Seto P	098_Mustika H	095_Ermina	055_Warsa	068_IW Joniarta	150_Made Sriasih
14.35-14.45	128_Kisman	140_Prapti S	104_Munira	096_Yusra P	088_Maria AH	102_Andreas S	
14.45-14.55	134_Ni Md Dini	023_Veni Rori S	049_Fitriah	103_Madelina A	094_Amrullah	127_Yumna Cici O	
14.55-15.05	138_B. Tri Ratna	015_Muh. Taufik	111_Lely K	004_Telly Savalas	100_Syahrul	137_Hasdi A	
15.05-15.15	149_Merry W	148_Ihsanawati	117_IM. Sudarma			112_I WynYasa	
15.15-15.35	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	DISCUSSION	
15.35 -16.00	CLOSING CEREMONY OF 2nd ICST						
	2 nd ICST Recommendation						
	Presentation of Best Oral and Poster Prizes						
	Closing Speech						
	Chairman of 2st ICST						
	University of Malaya						
	END OF DAY 2						

DAY 3: FRIDAY, AUGUST 25th, 2017

08.00 -12.00	Workshop on Cell culture and analysis of cell death by fluorescence microscopy (Imuno- Biology Laboratory, University of Mataram)	Dr. Masao Miyake Fukushima Medical University, Japan
08.00 -17.00	Field Trip	
		END OF DAY 3
		END OF 2nd ICST PROGRAMME



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VPS33B Protein Is the Main Interaction Partner of *Mycobacterium tuberculosis* Protein Tyrosine Phosphatase A

Lalu Rudyat Telly Savalas^{1,2)*}, Prapti Sedijani¹⁾, Jannatin 'Ardhuha¹⁾ and An Nuurun Nisa²⁾

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ABSTRACT The Success of *Mycobacterium tuberculosis* latent infection is known to stem from interaction between molecules secreted by the bacterium and its host proteins. Among *M. tuberculosis* proteins known to account for latent infection are PtpA, PtpB, PknG, PknF, etc. Studies indicated that PtpA might interact with several human proteins. In the present study, by using yeast two hybrid screening, we have shown that human proton pump VPS33B is the main interaction partner of *M. tuberculosis* PtpA. Since VPS33bB plays an important role in the acidification of lysosome, this finding strengthens the notion that PtpA promotes latent infection by disturbing acidification of lysosome. The later even helps the bacteria containing phagosome to get rid of hydrolytic degradation by lysosomal enzymes and allows the bacteria to enter dormancy phase within their host cells.

(Keywords: *Mycobacterium tuberculosis*, latent infection, PtpA, yeast two hybrid screening).

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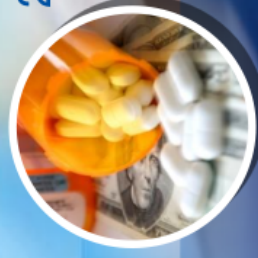
THE EMERGENCE OF SCIENCE
FOR HUMAN PROSPERITY AND HEALTH

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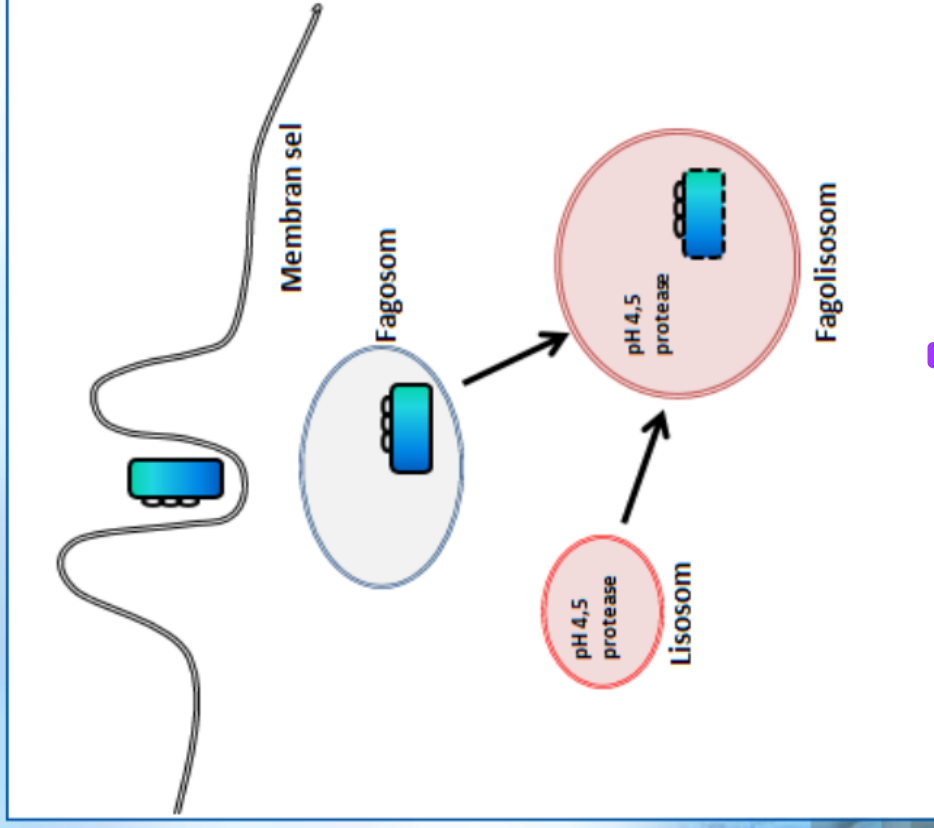
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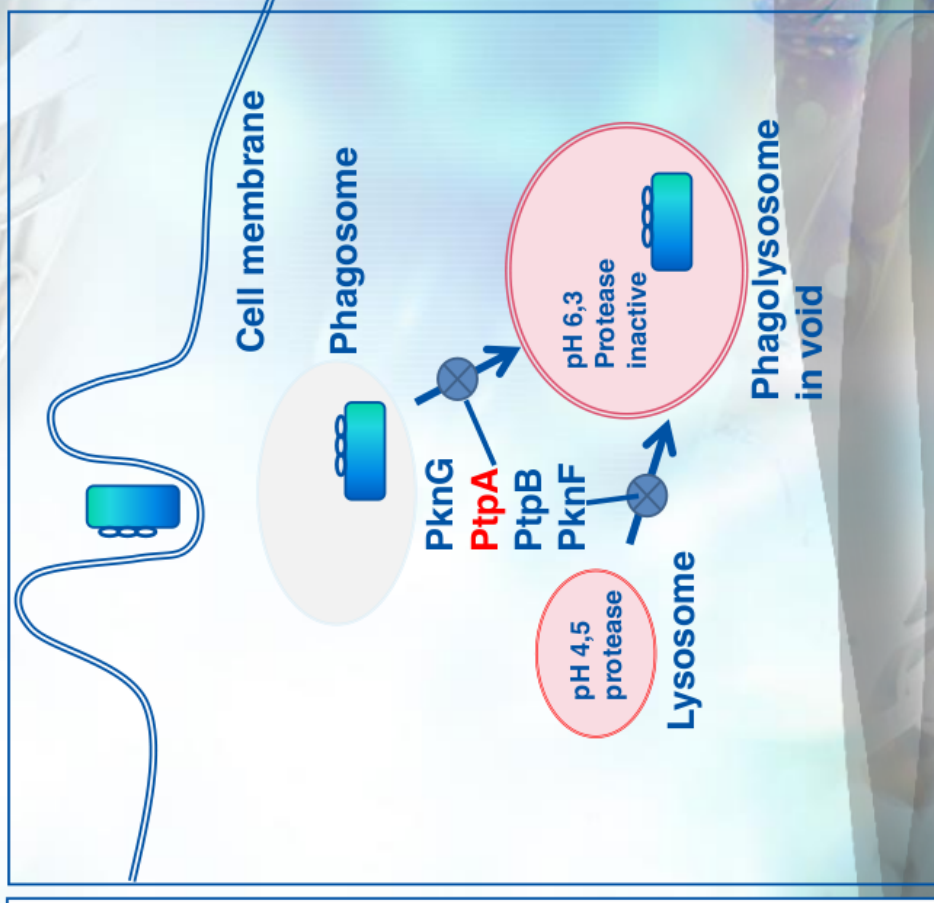
**VPS33B Is the Main Interaction Partner of
Mycobacterium tuberculosis PtpA**

1. INTRODUCTION

Phagocytosis



Latent infection



3 PtpA plays an important role in the latent TB Infection

2. RESEARCH QUESTION

Journal List > Scientific Reports > PMC5390082

SCIENTIFIC
REPORTS



Sci Rep. 2015; 5: 8819.

Published online 2015 Mar 6. doi: 10.1038/srep08819

PMCID: PMC5390082

New potential eukaryotic substrates of the mycobacterial protein tyrosine phosphatase PtpA: hints of a bacterial modulation of macrophage bioenergetics state

Mariana Margenat,¹ Anne-Marie Labandera,^{1*} Magdalena Gil,² Federico Carrion,⁵ Marcela Purificación,⁴ Guilherme Razzera,⁴ María Magdalena Portela,^{1,2,3} Gonzalo Obal,⁵ Hernán Terenzi,⁴ Otto Pritsch,⁵ Rosario Durán,² Ana María Ferreira,⁶ and Andrea Villarino^{a,1}

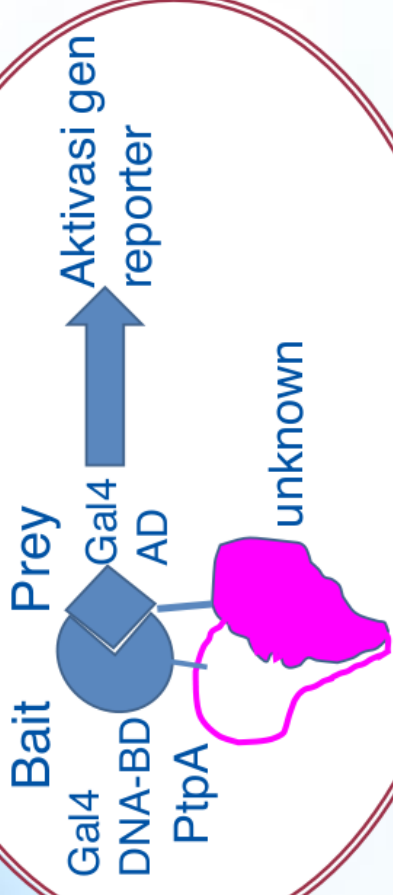
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- VPS33B
- Glycogen Synthase Kinase 3α
- Trifunctional enzyme (TFP):
 - the ATP synthase,
 - sulfide quinone oxidoreductase
 - and the cytosolic 6-phosphofructokinase

What is the main interaction partner of PtpA?



3. METHOD



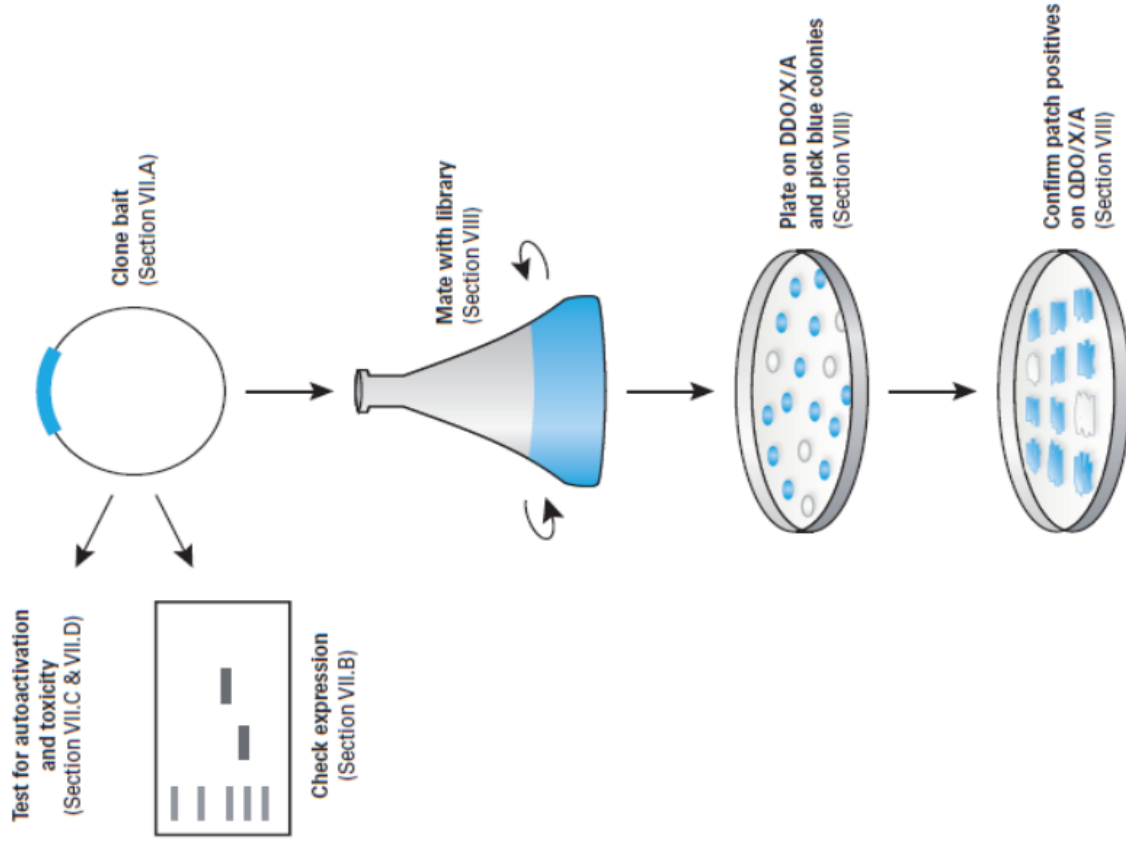
1. Plasmid DNA Isolation
2. PCR amplification



Selection against human cDNA library
Over 1.000.000 colony



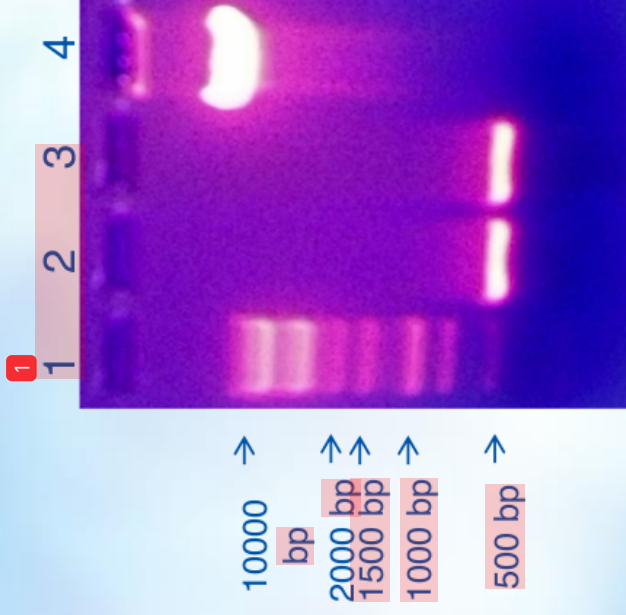
3. METHOD: Y2H



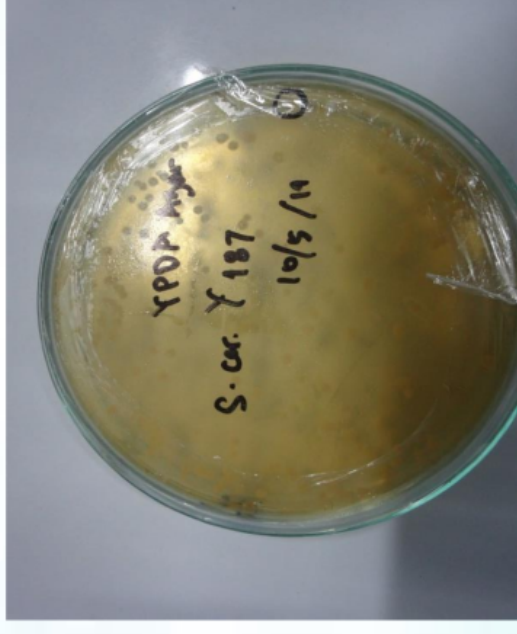
1. Cloning of PtpA with yeast expression vector pGBKT7-DNA-BD
2. Transformation of yeast with recombinant plasmid
3. Expression test with Western Blot
4. Mating yeast selection with blue-white
5. Insert



4. RESULTS



Insertion of PtpA to
pGBKT7-DNA-BD
Sequence is OK

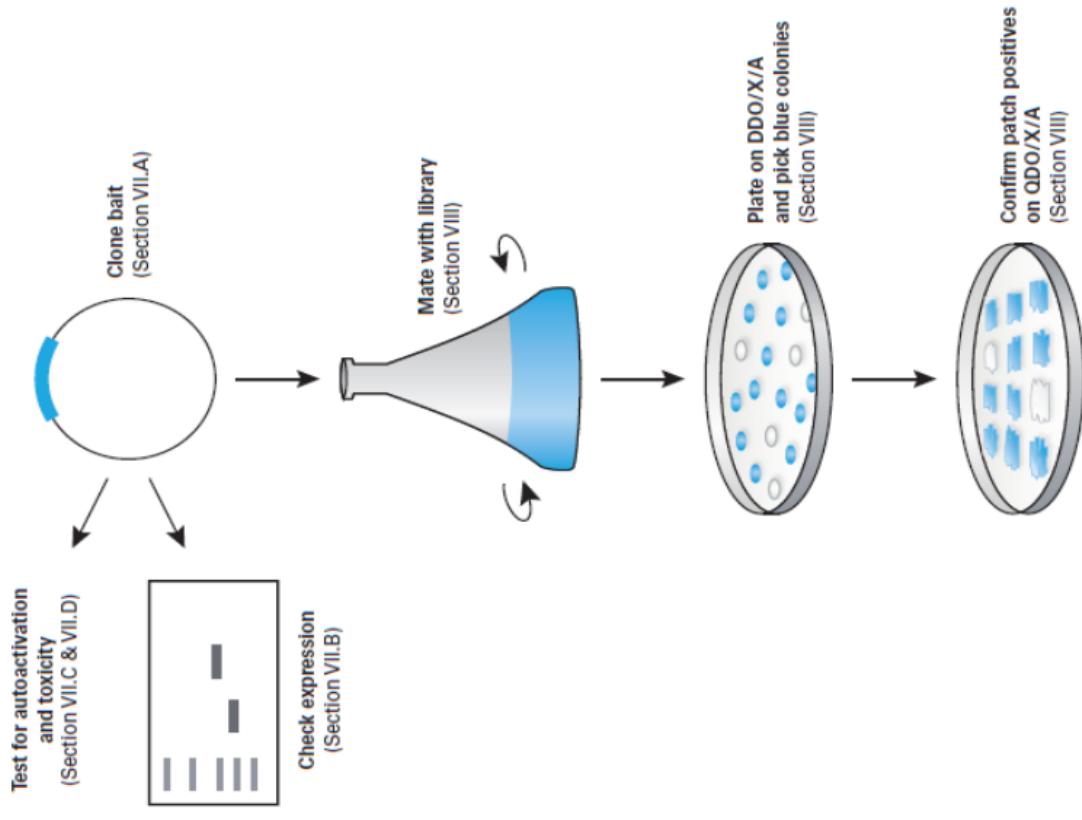


Yeast Y187
transformed with
pGBKT7-DNA-BD

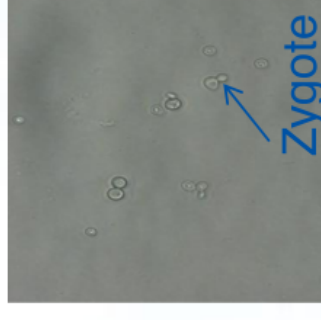


Expression of PtpA in
Yeast Y187

3. RESULTS



1. Cloning of PtpA with yeast expression vector pGBKT7-DNA-BD
2. Transformation of yeast with recombinant plasmid
3. Expression test with Western Blot
4. Mating yeast selection with blue-white



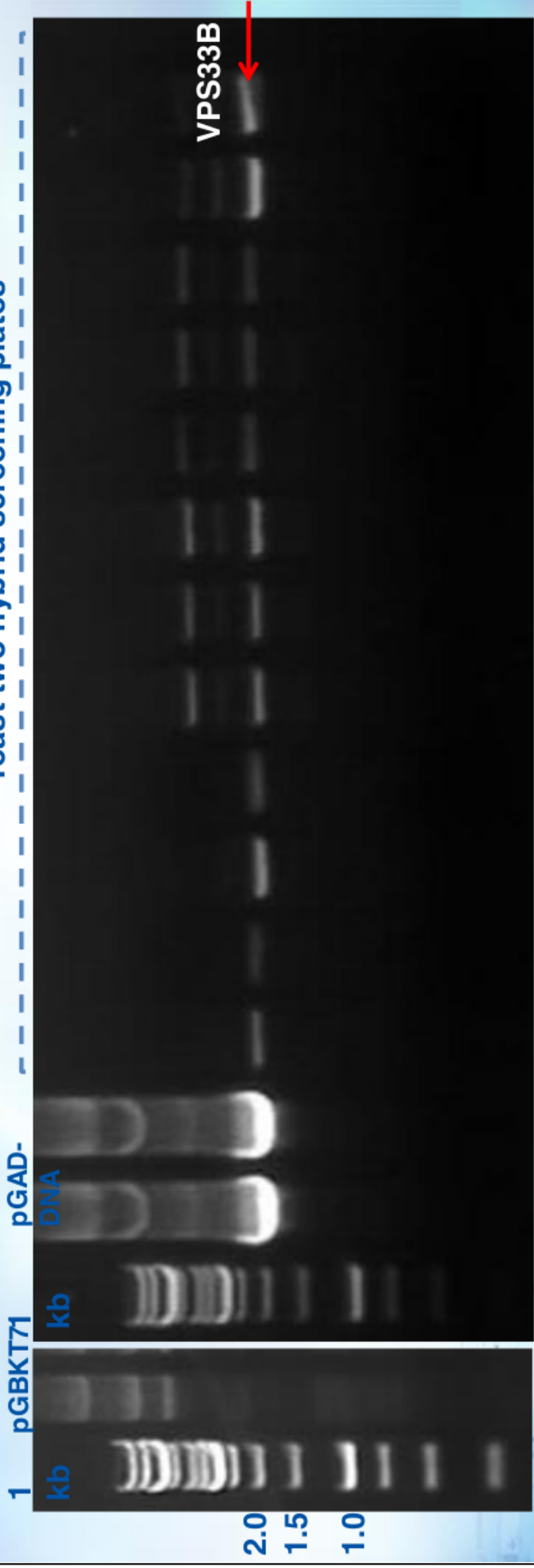
Selection from over 1.200.000 colonies



4. RESULTS

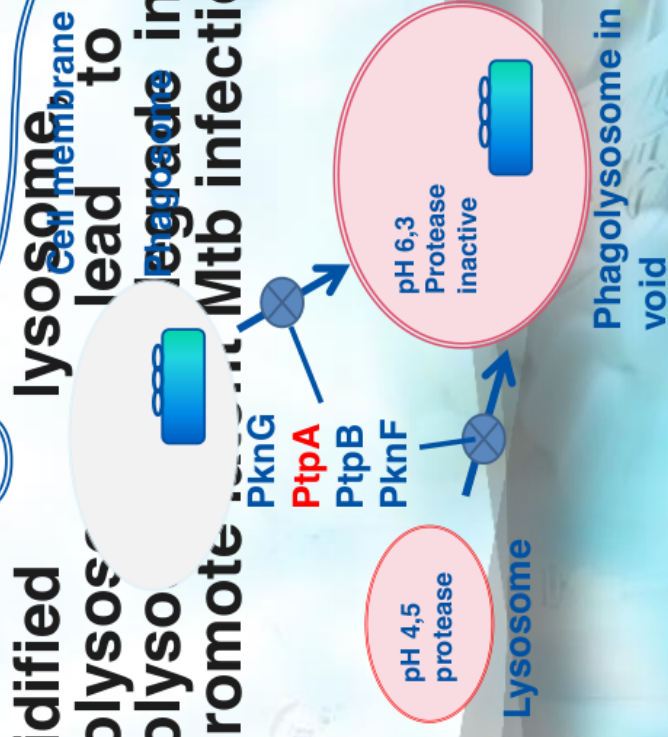


Yeast two hybrid screening plates



5. CONCLUSION

- ❑ VPS33B is the main interaction partner of *Mycobacterium tuberculosis* PtpA
- ❑ PtpA It exerts its effect by interfering with VPS33B that normally facilitates the acidification of lysosome.
- ❑ Unacidified lysosome and later phagolysosome lead to inability of phagolysosome to degrade invading bacteria and promote Mtb infection.





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