



**YENEPOYA**

(DEEMED TO BE UNIVERSITY)  
Recognized under Sec 3(A) of the UGC Act 1956  
Accredited by NAAC with 'A' Grade

## Details of the Collaborative Activity

2020-21

**Name of the Collaborating Institute:** Gulf Medical University, Ajman, UAE

**Year of MoU:** 2019

### Activities:

#### Joint Research and Publication

- Khouzam RA, Rao RSP, Venkatesh GH, Zeinelabdin NA, Buart S, Meylan M, Nimmakayalu M, Terry S, Chouaib S. An 8-gene hypoxia signature predicts survival in pancreatic cancer and is associated with an immunosuppressed tumor microenvironment. *Frontiers in Immunology*, 2021; 12:680435.

ATTESTED  


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OPEN ACCESS

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# An Eight-Gene Hypoxia Signature Predicts Survival in Pancreatic Cancer and Is Associated With an Immunosuppressed Tumor Microenvironment

Raefa Abou Khouzam<sup>1</sup>, Shyama Prasad Rao<sup>2†</sup>, Goutham Hassan Venkatesh<sup>1†</sup>, Nagwa Ahmed Zeinelabdin<sup>1</sup>, Stephanie Buart<sup>3</sup>, Maxime Meylan<sup>4</sup>, Manjunath Nimmakayalu<sup>5</sup>, Stéphane Terry<sup>3</sup> and Salem Chouaib<sup>1,3\*</sup>

<sup>1</sup>Thumbay Research Institute for Precision Medicine, Gulf Medical University, Ajman, United Arab Emirates, <sup>2</sup>Bioinformatics Division, Yenepoya Research Center, Yenepoya University, Mangalore, India, <sup>3</sup>INSERM UMR 1186, Integrative Tumor Immunology and Cancer Immunotherapy, Gustave Roussy, EPHE, Faculty De médecine Univ. Paris-Sud, University Paris-Saclay, Villejuif, France, <sup>4</sup>Centre de Recherche des Cordeliers, Sorbonne Université, Inserm, Université de Paris, F-75006, Paris, France, <sup>5</sup>Graduate Program in Diagnostic Genetics and Genomics, School of Health Professions, MD Anderson Cancer Center, The University of Texas, Houston, TX, United States

Intratumoral hypoxia is a widely established element of the pancreatic tumor microenvironment (TME) promoting immune escape, tumor invasion, and progression, while contributing to treatment resistance and poor survival. Despite this critical role, hypoxia is underrepresented in molecular signatures of pancreatic ductal adenocarcinoma (PDA) and concurrent investigations into the hypoxia-immune status are lacking. In this work a literature-based approach was applied to derive an eight-gene hypoxia signature that was validated in fourteen cancer cell lines and in a cohort of PDA. The eight-gene hypoxia signature was significantly associated with overall survival in two distinct PDA datasets and showed independent prognostic value in multivariate analysis. Comparative analysis of tumors according to their hypoxia score (high versus low) determined that tumors with high hypoxia were significantly less enriched in cytotoxic T-cells, and cytolytic activity. In addition, they had lower expression of cytokines and tumor inflammatory markers, pointing to the signature's ability to discern an immune "cold", hypoxic TME. Combining the signature with an immune metric highlighted a worse survival probability in patients with high hypoxia and low immune reactivity, indicating that this approach could further refine survival estimates. Hypoxia as determined by our signature, was significantly associated with certain immune checkpoint inhibitors (ICI) biomarkers, suggesting that the signature reflects an aspect of the TME that is worth pursuing in future clinical trials. This is the first work of its kind in PDA, and our findings on

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## Details of the Collaborative Activity

2019-20

**Name of the Collaborating Institute:** Gulf Medical University, Ajman, UAE

**Year of MoU:** 2019

### Activities:

1. Dr. VijayaKumar, Vice Chancellor from YDU visited GMU and delivered a guest talk “Updates on Robotic Surgery” on October 2019
2. Dr. Arun AB, Anurag Bhargav, Dr. Rekha PD, Dr. Keshav Prasad and Dr. Madhavi Bhargav visited GMU during 17<sup>th</sup> Nov-19<sup>th</sup> Nov 2019. Interacted with the faculty on various aspects of research and education. 4 seminars were delivered by the YDU faculty to the GMU team.
1. Dr. Rekha P D delivered guest talk on “Urine Microbiome in Kidney stone disease” in Gulf Medical University on 19.11.2019.
2. Dr. Anurag Bhargav delivered guest talk in Gulf Medical University on “Approach to acute undifferentiated fever with focus on Re-emerging infections”
3. Dr. Madhavi Bhargav delivered guest talk on “TB and Nutrition: Back to the Basics” in Gulf Medical University during their visit.
4. Dr. Keshav Prasad delivered guest talk on “Functional proteomic approaches for the Discovery of actionable molecules in human diseases” in Gulf Medical University.

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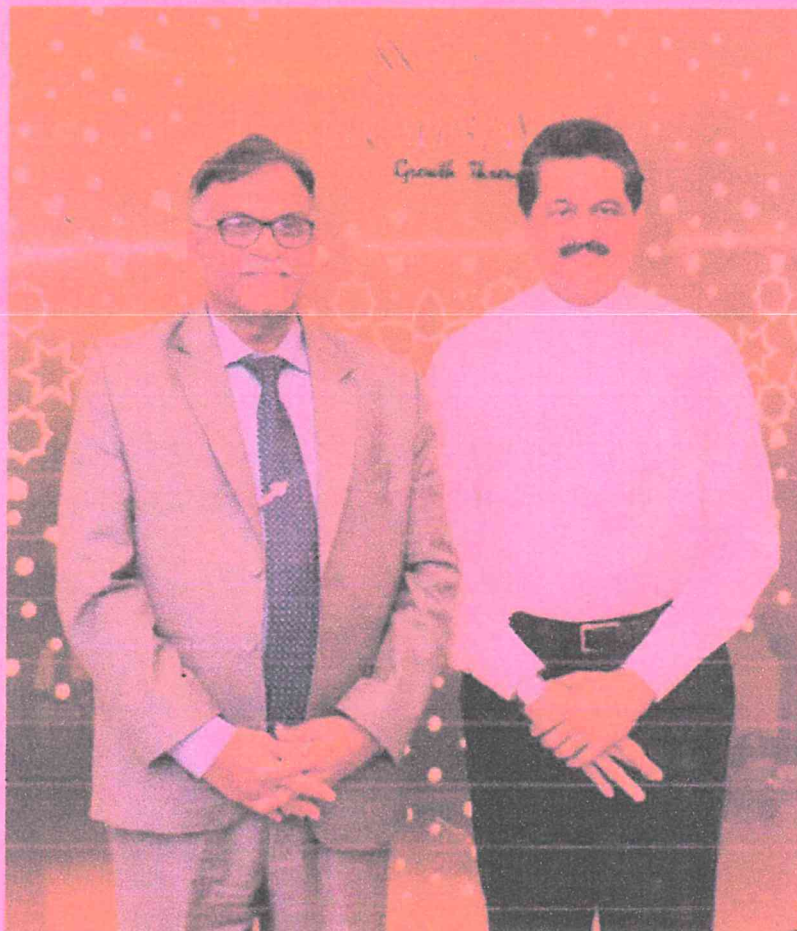
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## Ajman: VC of Yenepoya University visits GMU, delivers lecture on 'Robotics Surgery'

• 📅 Wed, Oct 23 2019 09:56:06 AM

### Media Release

**Ajman, Oct 23:** Dr M Vijaya Kumar, the vice chancellor of Yenepoya University, Mangaluru, India, visited Gulf Medical University (GMU), Ajman, the leading medical university in the Middle East region, on Tuesday, October 22. He was received at the University by Prof Manda Venkatramana, vice chancellor, academics, GMU. The vision, mission and future strategic directions of Gulf Medical University were presented before Dr M Vijaya Kumar.



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Later, Dr M Vijaya Kumar toured the state-of-the-art facilities for medical education, healthcare and research at Thumbay Medicity, including the Gulf Medical University, Thumbay University Hospital, Thumbay Physical Therapy & Rehabilitation Hospital and Thumbay Dental Hospital. He met Dr Thumbay Moideen, founder president of Thumbay Group. He commended Thumbay Group for the outstanding facilities at Thumbay Medicity, especially the three cutting-edge academic hospitals, all part of the Gulf Medical University Academic Health System, a one-of-its-kind academic health system in the region's private sector.

Later at GMU, Dr M Vijaya Kumar delivered a guest lecture on 'Updates on Robotic Surgery', detailing the techniques and benchmarks of the fast-growing field of robotic surgery. He was presented by a memento by GMU, as a mark of gratitude for his enlightening lecture.

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جامعة خليج الطبية  
GULF MEDICAL UNIVERSITY

مبنى  
THUMBAY

November 6<sup>th</sup>, 2019

To,

Dr. Arun AB, Deputy Director, QAC, Yenepoya Research Center  
Dr. Rekha P.D, Deputy Director, Yenepoya Research Center  
Dr. Keshav Prasad, CSBMM, Yenepoya Research Center  
Dr. Anurag Bhargava, Professor-Dept. of Medicine at Yenepoya Medical College  
Dr. Madhavi Bhargav, Department of Community Medicine, CNS, Yenepoya University  
University Road Deralakatte, Mangalore – 575018  
Karnataka, India

**Subject: Invitation to visit Gulf Medical University in November 2019**

Dear All,

Greetings from the Gulf Medical University!

It gives me great pleasure to invite you to visit Gulf Medical University, Ajman from 17-20<sup>th</sup> November with the aim of taking our collaboration one step further. Your visit will be vital to facilitate joint research activities, training programs & exchange programs of common interest in the field of cancer research & medical education.

We will also organize your research work presentations followed by interactive sessions with our faculty.

The University will be providing hotel accommodation and local logistics for the visit.

Looking forward to your kind reply to make the necessary arrangements at our end.

Best regards,

Prof. Salem Chouaib  
Vice Chancellor Research & Director  
Thumbay Research Institute for Precision Medicine

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**Day I: Sunday**      **Date: 17<sup>th</sup> November 2019**

11:15 am	Pick up from DXB airport to hotel in Ajman (Flight arrival time - 11:05 AM) <ul style="list-style-type: none"> <li>• Dr. Arun Bhagwath</li> <li>• Dr. Madhavi Bhargav</li> <li>• Dr. T. S. Keshava Prasad</li> <li>• Dr. Rekha P.D</li> </ul>
10:45 pm	Pick up from DXB airport to hotel in Ajman (Flight arrival time – 22:45 PM) <ul style="list-style-type: none"> <li>• Dr. Anurag Bhargava</li> </ul>

**Day II: Monday**      **Date: 18<sup>th</sup> November 2019**

10:00 am	Pick up from hotel
10:15 am	Arrival at Gulf Medical University. Received by Prof. Salem Chouaib (Vice Chancellor Research & Director TRIPM) & Mr. Vinod Abraham (Director External and International Affairs)
10:30 am – 11:00 am	Meeting with Prof. Hossam Hamdy, Chancellor & Prof. Manda Venkatramana (Vice Chancellor Academics)
11:00 am – 12:15 pm	Tour of GMU facilities, TRIPM, Thumbay labs, Dental Hospital, Rehabilitation Hospital and Thumbay University Hospital (Accompanied by Mr. Vinod Abraham, Director External and International Affairs)
12:15 pm – 12:30 pm	Meeting with President Sir & Mr. Akbar Thumbay Moideen
<b>12:30 pm – 1:30 pm</b>	<b>Lunch at Terrace restaurant</b>
1:30 pm – 2:30 pm	<b>Seminar</b> by Dr. Anurag Bhargava on “ <b>Approach to acute undifferentiated fever with focus on Re-emerging infections</b> ”
2:30 pm – 3:30 pm	<b>Seminar</b> by Dr. Madhavi Bhargav on “ <b>TB and Nutrition: Back to the Basics</b> ”.
3:30 pm – 4:30 pm	Meeting with TRIPM faculty (Dr. Rania, Dr. Suman & Dr. Raefa)
4:30 pm	Departure from GMU to Hotel
5:30 pm	DXB airport drop for Dr. Anurag Bhargava (Flight departure at 20:40 PM)
7:00 pm	Dinner with Prof. Salem Chouaib <ul style="list-style-type: none"> <li>• Dr. Arun Bhagwath</li> <li>• Dr. Madhavi Bhargav</li> <li>• Dr. T. S. Keshava Prasad</li> <li>• Dr. Rekha P.D</li> </ul>

**Day III: Tuesday**      **Date: 19<sup>th</sup> November 2019**

10.00 am	Pick up from hotel
10:15 am	Arrival at GMU
10:30 am – 11:30 am	<b>Seminar</b> by Dr. T. S. Keshava Prasad on “ <b>Functional proteomic approaches for the Discovery of actionable molecules in human diseases</b> ”
11:30 am – 12:30 pm	Meeting with GMU Officials <ul style="list-style-type: none"> <li>• Prof. KG Gomathi (Associate Dean- College of Medicine)</li> <li>• Prof. Nelofer Khan (Professor, Biochemistry, College of Medicine)</li> <li>• Prof. Shatha Al Sharbatti( Head, Community Medicine)</li> <li>• Prof. Jayadevan Sreedharan(Professor, Epidemiology)</li> </ul>

Itinerary- Yenepoya University (INDIA) Delegation visit

	<ul style="list-style-type: none"><li>• Prof. Tatjana Ille (Head, General Education and Professor, Statistics and Research Methodology)</li><li>• Dr. Preetha Shetty (Dept. of Cytogenetics, College of Medicine)</li></ul>
12:30 pm-1:00 pm	Meeting with TRIPM faculty (in continuation to the previous day meeting) – Dr. Goutham & Dr. Vinoth
1:00 pm- 2:00 pm	Lunch at Terrance Restaurant
2:00 pm-3:00 pm	Meeting with TRIPM faculty (Dr. Walid, Dr. Prathibha, Ms. Nagwa & Mr. Husam)
3:30 pm – 4:30 pm	Seminar talk by Dr. Rekha P.D. on “Urine Microbiome in Kidney Stone disease”.
4:30 pm- 5:00 pm	Closing remarks (Chancellor & Vice Chancellor Research)
5:00 pm	Departure from GMU to Hotel
8:00 pm	Pick up from Hotel to Airport (Flight departure at 11:40 PM)

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YU/REG/HRD/764/APT/2019

08.11.2019

**OFFICIAL MEMORANDUM**

Sub: Deputation to visit to Gulf Medical University  
as a part of Collaboration.

Ref: Letter from Dy. Director – QAC dated 15.10.2019.

\*\*\*\*\*

The following faculty are deputed to visit to Gulf Medical University as a part of Collaboration from 17<sup>th</sup> to 19/20<sup>th</sup> November, 2019 with Air fare/D.A. and the period of absence is considered as Duty Leave.

1. Dr.Arun A.B., Dy. Director, QAC
2. Dr.Rekha P.D., Dy. Director, YRC
3. Dr.Keshav Prasad, Dy. Director, CSBMM, YRC
4. Dr.Anurag Bhargav, Professor of Medicine & Head, Centre for Nutrition Studies
5. Dr.Madhavi Bhargav, Professor, Dept. of Community Medicine & Dy. Head, CNS, YMC

They are requested to submit their report upon their return.

*Kesomayaji*  
REGISTRAR 8/11

To,

1. Dr.Arun A.B., Dy. Director – QAC
2. Concerned faculty

CC to: Finance Officer  
Dy. Director – QAC  
Principal, YMC  
Medical Supdt./Concerned HOD  
P.A. to Vice Chancellor  
HRD section/P.F.

**ATTESTED**

*Kesomayaji*  
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جامعة الخليج الطبية  
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**FRAMEWORK AGREEMENT FOR COLLABORATION ON ACADEMICS AND RESEARCH BETWEEN YENEPOYA (DEEMED TO BE UNIVERSITY), MANGALORE, INDIA AND GULF MEDICAL UNIVERISTY, AJMAN, UAE**

This Agreement dated ...../...../2019 is made **BY AND BETWEEN:**

**The party of the first part,**

**Dr. Gangadhara Somayaji, Registrar of Yenepoya University, Deralakatte, Mangalore, Karnataka, India,** acting on behalf of Yenepoya University, Mangalore.

**And the party of the second part,**

**Prof. Manda Venkatramana, Vice Chancellor Academics of Gulf Medical University, P.O. Box 4184, Ajman, United Arab Emirates,** acting on behalf of Gulf Medical University, U.A.E

The Parties mutually acknowledge the necessary capacity to subscribe to this Framework Agreement, and to this effect:

**DECLARE**

**FIRST.-.** That Yenepoya (Deemed to be University) at Mangalore, Karnataka, India was established under the section 3A of the UGC Act 1956 in the year 2008. The University is accredited "A" grade by the NAAC and is currently at 92nd position among the 100 top insitutions ranked under National Instiitutional Ranking Framework of MHRD, Govt. Of India. The University offers 105 different programmes in the areas of Health and Allied Sciences, The University currently has on its rolls nearly 3500 students. The University has introduced 70 new programmes during last 5 years. The PhD programme is offered in 39 Departments and Research Centres as per the UGC regulations. Research fellowship schemes and short research studies have been included in the curriculum to bring about research orientation and practice of evidence based medicine. The research and innovation centers of the University carry out research in emerging areas of health and allied areas with emphasis on translational and patient oriented clinical research.

**ATTESTED**  
Page 1 of 5

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## **SECOND --**

**GULF MEDICAL UNIVERSITY (GMU)** established in 1998 is a leading medical university in the Gulf region. The University is accredited by Commission for Academic Accreditation-licensed under Ministry of Higher Education – UAE.

The **GULF MEDICAL UNIVERSITY**, is now a leading medical university with its own growing network of world-class academic institutions, hospitals and a dynamic research division. We are constantly endeavoring to transform the University into a vibrant Academic Health System linking the best of medical education, healthcare and research, manned by the finest professionals..

GMU offers Medical and Health Professional Education in the field of Medicine, Dentistry, Pharmacy, Physiotherapy, Nursing, Medical Laboratory Sciences, Anesthesia Technology, Medical Imaging Sciences and Healthcare Management and Economics. GMU also offers postgraduate programs in Physical Therapy, Clinical Pharmacy, Periodontics, Endodontics, Public Health, Health Professions Education, Environmental Health and Toxicology, Healthcare Management and Economics. In addition, the university also offers Short Term Certificate Courses for Health workforce development and career enhancement. GMU differentiates itself having its own network of hospitals, clinics, and institutes.

**THIRD** - That both parties according to their nature and purposes share interests in the development of research in order to foster the generation, the comprehension and transfer of knowledge. Therefore, both parties are interested in signing an agreement regulating this collaboration and developing the described objectives. From now on this agreement will be called Framework Agreement, subject to the following.

## **CLAUSES**

### **FIRST - OBJECTIVE**

This Framework Agreement is intended to facilitate the scientific exchange and advice between the undersigned institutions within the scope described in this document and, in particular, those activities related to teaching, research, management and transfer of the results of research activity.

**ATTESTED**

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## **SECOND - FORMS OF COLLABORATION**

The forms of collaboration under this Framework Agreement may include, but are not limited to:

1. Explore possibilities for Teaching support in degrees, postgraduate and doctoral programs through giving conferences and specialized seminars.
2. Collaboration in Medical Education and Academic Innovation;
  - a) Faculty Training in Medical Education
  - b) Certificate of competency in Medical Education
  - c) GMU partial scholarships in
    - i. Joint Masters in Health Professions Education (in collaboration with FAIMER).
    - ii. Master in Public Health (in collaboration with University of Arizona).
    - iii. Executive Master in Healthcare Management and Economics (in collaboration with University of Central Florida).
3. Explore joint use of scientific and technical facilities;
4. Explore preparation and development of joint research projects; in which faculty and doctoral students can participate doing doctoral research as part of their PhD.
5. Joint publications, projects of national and international significance; and joint funding of projects
6. Explore possibilities for joint development of specialized training programmes such as degrees, postgraduate and doctoral programmes.
7. Organization of conferences and seminars;
8. Whatever other form of collaboration considered necessary to meet the objectives of this Agreement.

## **THIRD - DEVELOPMENT AND MANAGEMENT OF JOINT ACTIVITIES**

The development of the activities to be developed jointly between the Parties shall be established through specific Agreements, in which the signatory entities or any other minority holdings shall be able to intervene, directly or indirectly.

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The specific Agreements shall refer to this Framework Agreement and, where appropriate, shall establish the economic contributions which are necessary for the adequate development of the project.

#### **FOURTH - SUPERVISION OF THE EXECUTION OF THE FRAMEWORK AGREEMENT**

A Supervision Committee shall be created to interpret, supervise and control compliance with this Framework Agreement, as well as with the specific Agreements subscribed to during the development of this Agreement. Each party shall designate two of the four members of the Committee, which shall meet at least once a year.

The Committee shall interpret the questions that may arise regarding the content of this Agreement and shall ensure coordination, development, supervision and implementation of the actions set forth therein.

#### **FIFTH - LENGTH OF THE AGREEMENT**

This Framework Agreement shall remain in force for a period of five years, and may be extended for additional periods by agreement of the Parties, unless otherwise expressed by one of the Parties and communicated at least three months before the expiry date. The specific Agreements made in the course of this Agreement shall be of the agreed length for each case.

#### **SIXTH - DISCLOSURE OF INFORMATION**

Any information or publicity resulting from collaboration under this Framework Agreement or the specific Agreements shall include the collaboration between the Parties.

#### **SEVENTH - TERMINATION**

This Framework Agreement may be amended at any time by agreement of all Parties, at request of either party, and may be terminated by any of the following causes:

- a) By mutual agreement;
- b) due to a serious and repeated breach of the obligations under the agreement;
- c) Due to a denunciation of any of the Parties in accordance with the seventh clause;
- d) Other causes set out in the legislation currently in force.

**ATTESTED**

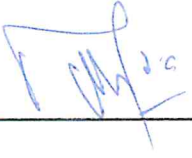



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## EIGHTH - JURISDICTION

This Agreement has a civil nature. Any conflicts that could arise regarding the interpretation and execution of this Agreement will be resolved by mutual agreement and by the Supervision Committee mentioned in the fourth clause.

**IN WITNESS WHEREOF**, the undersigned, being duly authorized, sign this Framework Agreement in duplicate, on all the sheets, in the place and on the date mentioned at the beginning of said Agreement.

Gulf Medical University, Ajman	Yenepoya (Deemed to be University), Mangalore
<b>Signed:</b>	<b>Signed:</b>
1.  _____	1.  _____
<b>Prof. Manda Venkatramana</b> <b>Vice Chancellor Academics</b>	<b>Dr. Gangadhara Somyaji</b> <b>Registrar</b>
<b>Date:</b> _____	<b>Date:</b> <u>03/04/2019</u>
2. _____	2.  _____
<b>Prof. Salem Chouaib</b> <b>Vice Chancellor Research</b>	<b>Dr. Rekha P. D,</b> <b>Dy. Director- YRC</b>
<b>Date:</b> _____ 	<b>Date:</b> <u>03.04.2019</u>

Deputy Director  
Yenepoya Research Centre  
Yenepoya (Deemed to be University)  
Deralakatte, Mangaluru-575018

