BRIC-NATIONAL INSTITUTE OF IMMUNOLOGY

Lok Sabha Admitted Question No.595 on "Systemic Failures in Research and Development".

(a) the details of number of patents filed by publicly funded research institutions in India during the last five years, institution-wise;

BRIC-NII has filed 46 patents in the last 5 years (2020-2021 to 2024-2025)

(b) the details of number of patents granted in India during the last five years, institution-wise;

For BRIC-NII, a total of 28 patents have been granted in the last 5 years (2020-2021 to 2024-2025)

Year	**National**		**International**		**Total Filed (National + International)**	**Total Granted (National + International)**
	Filed	***Granted***	***Filed***	***Granted***		
2024-2025	**8**	**1**	**5**	**1**	**13**	**2**
2023-24	**-**	**7**	**2**	**1**	**2**	**8**
2022-23	**5**	**6**	**3**	**1**	**8**	**7**
2021-22	**2**	**2**	**4**	**0**	**6**	**2**
2020-21	**15**	**8**	**2**	**1**	**17**	**9**
Total	**30**	**24**	**16**	**4**	**46**	**28**

BRIC-National Institute of Immunology

Questionnaire-I

Q.6. What initiatives have been taken by the Department to collaborate with the Industrial sector towards integration of technologies developed by the Department or to provide consultancy services to the industries and the progress made so far? **(Nodal Officers)**

The Institute proactively explores collaboration with industry for commercialisation of patents, technology transfer, and consultancy services. To facilitate industry engagement, potential technologies have been showcased at the India International Science Festival (IISF) exhibitions from 2015 to 2025. In addition, details of granted patents are displayed on the National Institute of Immunology website to invite expressions of interest from industry.

The Institute has also participated in Global Bio-India exhibitions since 2021, jointly organised by Department of Biotechnology and Biotechnology Industry Research Assistance Council (BIRAC), enabling direct interactions with industry partners for exploring commercialisation opportunities. Further, NII signed a Memorandum of Understanding with Biotech Consortium India Limited (BCIL) in 2014 for a period of ten years to facilitate technology transfer to industry.

Through the Institute's dedicated Technology Transfer Office (TTO) efforts, several patents and technologies have been successfully transferred, and consultancy services have been provided to industry. Details of industrial collaborations over the last five years are provided in **Annexure-I.**

Q.7. How does the Department collaborate with the Private Sector in commissioning of projects/schemes of the Department? Does the Department plan to increase the participation of Private Sector, especially in matters of human resources and man power? **(Nodal Officers)**

The Institute actively collaborates with the private sector to engage industry partners in providing consultancy services, undertaking collaborative research, and licensing technologies, as reflected in the MoUs and agreements signed with various industries. Details of these collaborations are provided in **Annexure-2**.

Q.8. Whether the Department has taken any initiative towards commercialization and revenue generation from its services, products, research capacities, technologies developed, etc? Give details of the funds generated year wise from 2023-24 to 2025-26. What is the percentage of these funds with respect to the R.E. of the Department for respective years? **(Nodal Officers)**

The institute took following initiative towards commercialization and revenue generation from its services, products, research capacities, technologies developed.

- The institute keeps exploring the possibility to collaborate with the industries for commercialization of patents, technology transfer and providing consultancies to industries . In order to collaborate with industries, the Institute displayed potential technologies at 'India International Science Festival (IISF)' exhibition 2015 to 2025.

- Institute has also displayed the list of granted patents on NII website in order to invite the response from industries.
- The institute also participated in the Global Bio-India exhibitions in 2021 and later which were jointly organized by DBT and BIRAC. Institute had interacted with industries during the events exploring the possibility of commercialization of technologies developed by the Institute.
- MoU with BCIL: NII had signed an MoU with BCIL in 2014 for ten years for facilitating technology transfer to industry.

The Institute has undertaken the following initiatives to promote commercialisation and revenue generation from its services, research capacities, and technologies developed.

The Institute continuously explores collaboration with industry for commercialisation of patents, technology transfer, and consultancy services**,** and has showcased potential technologies at the India International Science Festival (IISF) exhibitions from 2015 to 2025**.**

To facilitate industry engagement, the Institute has also displayed details of granted patents on the website of the National Institute of Immunology, inviting expressions of interest from industry.

Further, the Institute has participated in Global Bio-India exhibitions since 2021, jointly organised by the Department of Biotechnology and Biotechnology Industry Research Assistance Council (BIRAC), enabling direct interaction with industry for commercialisation of Institute-developed technologies.

Additionally, the Institute signed a Memorandum of Understanding with Biotech Consortium India Limited (BCIL) in 2014 for a period of ten years to facilitate technology transfer to industry.

Funds generated year wise from 2023-24 to 2025-26

Particulars	**FY 2023-24**	**2024-25**	**2025-26**
Revenue from services, products, research capacities, technologies developed	Rs. 18,65,243	0	Rs. 5,40,000
Percentage of these funds with respect to the R.E	0.43	0	0.10

Q.9. What has been the outcome with respect to patents filed, papers published and their impact factor, budget allotted and utilized, during the last 3 years including 2025-26? **(Nodal Officers)**

Patents and Publications

Year	**2023-2024**	**2024-2025**	**2025-2026**
Patents Filed	2	11	2

Patent Granted	8	2	0
Papers Published	67 Original Peer-Reviewed Articles 11 Reviews 1 Book Chapter	74 Original Peer-Reviewed Articles 1 Editorial 13 Reviews 5 Book Chapters	58 Original Peer-Reviewed Articles 7 Reviews

Publication List with Impact Factor in **Annexure 3**

Budget allotted and utilized

Particulars	**FY 2023-24**	**2024-25**	**2025-26**
Patents	93,34,869/-	63,01,073	43,37,307/- (till 05.02.2026)
Paper Publication	30,85,606/-	37,35,184	42,28,845/- (till 05.02.2026)

Q.11. What has been the outcome of research done and technologies developed in terms of their translation into commercial products/services? Whether Department is laying special focus on commercialization of technologies developed by it and exploring their spin-off into industrial usage. Give details thereof. **(Nodal Officers)**

Many technologies have been transferred to industry (Annexure-1), resulting in revenue generation. The Institute has undertaken the following initiatives towards commercialisation and revenue generation from its services, products, research capacities, and technologies developed:

- The Institute continuously explores collaboration with industry for commercialisation of patents, technology transfer, and provision of consultancy services. To facilitate such collaborations, potential technologies were showcased at the India International Science Festival (IISF) exhibitions from 2015 to 2025.
- The Institute has also displayed the list of granted patents on the NII website to invite expressions of interest from industry.
- The Institute participated in the Global Bio-India exhibitions from 2021 onwards, jointly organised by DBT and BIRAC, and interacted with industry partners during these events to explore commercialisation of technologies developed by the Institute.
- MoU with BCIL: NII signed a Memorandum of Understanding with BCIL in 2014 for a period of ten years to facilitate technology transfer to industry.
- The Department of Biotechnology (DBT) issued “Operational Guidelines for Implementing Scientific Entrepreneurship and Research Commercialization at iBRIC” in December 2024, which permit spin-offs and entrepreneurship.

Q.13. What initiatives have been taken by the Department towards ensuring that the research conducted and technologies developed by it is going to benefit the society at large as well as utilized by other Government Ministries/Departments such as Healthcare, Agriculture, Education, Disaster Management, Internal and International Security, etc. Please give details of some of these technologies. **(Nodal Officers)**

The institute has undertaken multiple strategic initiatives to ensure that research outputs and technologies developed by its researchers translate into tangible societal benefits and are effectively utilised by other Government Ministries and Departments as well as industry. These initiatives span **national research platforms, public-health–driven translational research, technology transfer, and inter-institutional and industry collaboration**. Some examples of these technologies are listed below:

1. Human Immune Monitoring and T-cell Immunoassay Platform (HIMTI)

The HIMTI platform is a resource at the BRIC-National Institute of Immunology for state-of-the-art immunological assays for the clinical trials of vaccines. The goal is to leverage on advanced immunological expertise to provide comprehensive immune cell monitoring in antigen-specific settings. The platform includes a variety of assays for measuring and assessing antigen-specific T cells and B cells in human blood. The immune assays include the detection of human cytokines, quantitation of virus-specific T cells, T-cell phenotype, T-cell functions, quantitation of polyfunctional T cells, measurement of anti-viral T cells, T-cell potential to develop humoral immunity, quantitation of virus-specific memory B cells (IgA^+, IgM^+ and IgG^+ B cells) etc. The platform offers immuno-bridging trials, trials for interchangeability, and the selection of promising vaccine candidates. This is a significant contribution to vaccine research in the country. During the Covid-19 pandemic, the platform was instrumental in generating scientific evidence for the T-cell immunity to Covid-19 vaccines and supporting the policymaking for vaccine implementation. Importantly, when the vaccine efficacy studies were not feasible, this platform was instrumental in conducting the immuno-bridging phase 3 clinical trial for testing intranasal COVID-19 vaccine "iNCOVACC" in generating systemic and mucosal cell-mediated immunity. The platform has been used for the interchangeability studies of Japanese encephalitis vaccines. Moreover, T-cell assays are now available for testing dengue vaccines and to determine their potential to induce long-term humoral immunity.

2. **Collagen-based Formulation for Osteoarthritis**

Technology developed at BRIC-NII related to collagen-based formulation for osteoarthritis treatment has been transferred to Purobien Lifesciences Pvt. Ltd. The formulation has been launched as a nutraceutical in market under the brand name of *UJC (Ultimate Joint Care) 360∞* (FSSAI approved, Trademark PL02).

3. **AdFalciVax: A Multistage Malaria Vaccine Candidate**

AdFalciVax is an innovative multistage malaria vaccine candidate designed to target two critical developmental stages of Plasmodium falciparum: the pre-erythrocytic (liver) stage, which is essential for preventing infection in humans, and the sexual (transmission) stage, which enables parasite spread via mosquitoes.

The vaccine leverages *Lactococcus lactis*, a safe, food-grade bacterium, as an expression

platform. AdFalciVax incorporates full-length PfCSP, a key pre-erythrocytic antigen with established roles in infection-preventive immunity. This is fused with PfsPro6C, a construct comprising subdomains from two major transmission-blocking antigens, Pfs230 and Pfs48/45, both produced in Lactococcus lactis. By combining antigens from distinct parasite stages, the vaccine aims to achieve both infection-blocking and transmission-blocking immunity.

Collaborating Institutes: ICMR–RMRC Bhubaneswar, BRIC–National Institute of Immunology, ICMR–National Institute of Malaria Research

Reference: Patent Application No. 202411095679 (Filed, 04/12/2024): "Producing a Chimeric Recombinant Multi-Stage Vaccine for Preventing Plasmodium falciparum Infection and Its Community Transmission" by Susheel Singh et al., co-invented by Dr. Agam Singh (NII) and owned by ICMR.

Q.15. In what manner the initiatives taken by the Department has benefitted the rural parts of the country and in upliftment of the backward communities and weaker sections of the society? (**Nodal Officers**)

To make science accessible and inclusive, the Dholpur Science Centre was developed by the BRIC–National Institute of Immunology (NII) and supported by the Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India. It was formally inaugurated on 8 July 2025 by the Hon'ble Union Minister of State (Independent Charge) for Science and Technology, Dr. Jitendra Singh, in the presence of the Hon'ble Minister of State, Government of Rajasthan, Shri Jawahar Singh Bedam, and Dr. Rajesh S. Gokhale, Secretary, Department of Biotechnology. Situated in Dholpur, one of the aspirational districts of Rajasthan, the Science Centre is designed to serve as a vibrant platform for STEM education, community learning, and public engagement in science. It features a range of interactive exhibits, live demonstrations, and hands-on models that enable students, teachers, and community members to experience science as a practical, problem-solving tool. The Centre is envisioned as a community resource—not only for school children, but also for teachers, youth, and local residents—aimed at spreading scientific awareness in critical areas such as agriculture, health, water conservation, and climate resilience.

	Aug 2025	Sept 2025	Oct 2025	Nov 2025	Dec 2025	Jan 2025
Visitors	1652	1686	258	118	504	105

Q.16. What initiatives have been taken by the Department to enhance the dissemination of information about its activities and achievements? What has been the overall expenditure incurred in these activities over the years 2023-24, 2024-2025 and 2025-26? Give details of the physical targets achieved. **(Nodal officers)**

BRIC-NII has adopted a multi-pronged science communication and outreach strategy to ensure wide dissemination of information about its research activities, achievements, and societal contributions. Key initiatives include the organisation of national and international seminars and conferences, facilitating student visits to the Institute under the Science Setu programme, and hosting an annual Open Day to engage students, educators, and the general public.

BRIC-NII actively participates in science festivals, exhibitions, and national science events, enabling direct public engagement. Dissemination is further strengthened through the publication of Annual Reports, brochures, and in-house magazines, alongside regular updates on social media platforms and the official website.

To provide focused and accessible coverage of institutional research, achievements, and events, a dedicated science communication portal—Immunoscope—has been developed as a special website showcasing BRIC-NII research news, outreach activities, and scientific milestones, thereby enhancing visibility, transparency, and public engagement.

BRIC-NII has instituted a position, the Public Relations Officer, who especially leads the science communication and outreach activities of the institution. Notably, a media and PR agency has been hired to help boost the dissemination of research news and improve outreach for all the DBT/BRIC institutions.

Notable Activities

SL No	Year	Activities	Reach
1	2023-2024	Public Lectures 1. From Crisis to Opportunity: The Transformative Power of Science, Innovation, and Partnerships in Global Health" by Dr Ashish K Jha, Dean Brown University School of Public Health	~600
		2. Safe but not too safe – Human challenge in TB by Prof Eic Joseph Rubin, Harvard Medical School 3. Can healthy people, ecosystems, and grassroots innovations/knowledge systems teach us something new? By Prof Anil K Gupta, Founder, Honey Bee Network	
2	2023-2024	NII Open Day: India International Science Festival 2023 Putreach; Theme: India's Vaccine Self-Reliance	150
3	2023-2024	National Science Day 28 February 2024	200

4	2023-2024	Participation in science festivals and expositions— India International Science Festival 2023 Global Bio India 2023 National Technology Week 2023	
5	2023-2024	Science Setu Visits	8 Schools and Colleges; ~265 students
6	2023-2024	Printing of Annual Report	
7	2024-2025	International Day of Immunology on 29 April 2024 celebrated with a public talk by Prof. K. Natarajan, Senior Professor at the Dr Ambedkar Center for Biomedical Research, University of Delhi and poster presentations and demonstrations by NII researchers.	5 Colleges of Delhi University and NII students, staff, and faculty; ~250
8	2024-2025	Mini Symposium: “Immunology in Focus”	~200
9	2024-2025	Open Space with undergraduate and Master students on the BioE3 policy with experts	~200
10	2024-2025	Participation in expositions and science festivals— Global Bio India 2024 India International Science Festival 2024	
11	2024-2025	The 2nd HFSP Frontier Workshop on the theme of “Driving Innovations in the Life Sciences: A role for AI?” on 26 November 2024. This was a joint initiative of DBT and HFSP supported by NII.	~200

12	2024-2025	"Ask Me Anything" Session with IIMC	~40
13	2024-2025	National Science Day 28 February 2025 (Public Talk with poster sessions)	~130
14	2024-2025	Science Setu Visits	12 schools and colleges; 500 students
16	2024-2025	Hiring of a Media and PR Agency for BRIC	
16	2025-2026	Two-day scientific symposium titled "Immunology and Allied Research in India: Foundations, Frontiers, and Futures" on 6–7 October 2025	~250
17	2025-2026	Three-day (13-15 November) Indo–French Workshop - *Infectious Diseases: Pathogen Biology and Immune Responses* - under the International Research Network (IRN).	~250
18	2025-2026	Curtain Raiser for IISF 2025 on 21 November	100
19	2025-2026	One-day conference: Metabolism in Disease and Development on 19 December 2025	150
20	2025-2026	Publications-- Research Booklet of NII Crystallogue	 200 copies 250 copies
21	2025-2026	Participation in the India International Science Festival 2025	
22	2025-2026	Science Setu Visits	630

Expenditure

Particulars	FY 2023-24	FY 2024-25	FY 2025-26
Overall expenditure incurred on dissemination of information about its	51,22,804/-	1,23,11,409/-	1,70,24,134/-

activities and achievements			

Q.17. Kindly give details of the PSUs/CPSEs/Autonomous Bodies under the Department. What are their primary objectives, significant achievements in the recent past, future goals? What has been the overall expenditure incurred over the years 2023-24, 2024-2025 and 2025-26? Give details of the physical targets achieved.

(Nodal officers)

BRIC-National Institute of Immunology

The mission of BRIC-NII is to advance the understanding of the immune system through cutting-edge interdisciplinary research. The institute aims to integrate diverse biological sciences—including immunology, infectious and chronic disease biology, molecular and cellular biology, chemical biology, structural biology, and computational biology—to develop innovative diagnostics, treatments, and vaccines.

The current initiatives are geared towards addressing pressing global health challenges, such as emerging infectious diseases, tuberculosis, malaria, cancer, neurodegenerative and metabolic disorders. By fostering collaboration across these interconnected fields, NII is committed to promoting human health and developing effective strategies to combat diseases that significantly impact communities worldwide.

Significant Achievements

Breakthrough 1

Topic: Vaccine Immunology

Details: The Human Immune Monitoring and T-cell Immunoassay Platform, available at the BRIC-National Institute of Immunology, provides cutting-edge immunological assays to support clinical trials of vaccines. The platform includes a variety of assays for measuring and assessing antigen-specific T cells and B cells in human blood. The immune assays include the detection of human cytokines, quantitation of virus-specific T cells, identification of T-cell phenotype and functions, quantitation of polyfunctional T cells, measurement of anti-viral T cells, assessment of T-cell potential to develop humoral immunity, quantitation of virus-specific memory B cells (IgA^+, IgM^+ and IgG^+ B cells) and more. The platform enables immuno-bridging and interchangeability trials, which are used to check the protection of vaccines as an alternative to efficacy trials. In addition, the platform facilitates the selection of candidate vaccines by testing their potential to induce optimal T-cell-dependent humoral immunity.

Impact: During the COVID-19 pandemic, the platform was used to generate scientific evidence for the presence of T-cell immunity to COVID-19 vaccines. This evidence was instrumental in supporting policy decisions for vaccine implementation. When the vaccine efficacy studies were not feasible, this platform was used to conduct the immuno-bridging phase 3 clinical trial for the intranasal COVID-19 vaccine "iNCOVACC". Further, the platform has been used for the interchangeability studies of Japanese encephalitis vaccines.

Breakthrough 2

Topic: Aging Research

Details: Taurine is a semi-essential amino acid made within our body and it declines in some tissues with age. A multi-national, collaborative study–led by Dr Vijay K. Yadav from Columbia University and involving the National Institute of Immunology and other institutes–found that taurine abundance decreases substantially with age in the bloodstream of mice, monkeys, and humans. Notably, taurine supplementation was shown to increase the average life span and health in different experimental models. Further, low levels of taurine in aged humans were associated with disorders like obesity, hypertension, inflammation, and diabetes and the taurine levels increased with a bout of exercise. Together, this evidence in humans suggests3 that taurine deficiency may be a driver of aging in humans as well.

Impact: Taurine supplementation could have an impact on health; however, a randomized clinical trial would be necessary to determine if taurine supplementation improves health in humans.

Publication: Singh P, Gollapalli K, Mangiola S, Schranner D, Yusuf MA, Chamoli M, Shi SL, Lopes Bastos B, **Nair T**, Riermeier A, Vayndorf EM, Wu JZ, **Nilakhe A**, Nguyen CQ, Muir M, Kiflezghi MG, Foulger A, Junker A, Devine J, Sharan K, Chinta SJ, Rajput S, Rane A, Baumert P, Schönfelder M, Iavarone F, di Lorenzo G, Kumari S, Gupta A, Sarkar R, Khyriem C, **Chawla AS**, Sharma A, Sarper N, Chattopadhyay N, **Biswal BK**, Settembre C, **Nagarajan P**, Targoff KL, Picard M, **Gupta S**, Velagapudi V, Papenfuss AT, Kaya A, Ferreira MG, Kennedy BK, Andersen JK, Lithgow GJ, Ali AM, **Mukhopadhyay A**, Palotie A, Kastenmüller G, Kaeberlein M, Wackerhage H, Pal B, **Yadav VK**. Taurine deficiency as a driver of aging. Science. 2023 Jun 9;380(6649):eabn9257. doi: 10.1126/science.abn9257. Epub 2023 Jun 9. PMID: 37289866. DOI: 10.1126/science.abn9257

Breakthrough 3

Topic: Tuberculosis Research

Details: The Indian Tuberculosis Genome Sequencing (InTGS) consortium, co-ordinated by BRIC-NII, has successfully sequenced 10,000 whole genomes of *Mycobacterium tuberculosis* (MTB) clinical strains, marking a major milestone in the fight against tuberculosis (TB). This initiative, conceived by the Department of Biotechnology, Government of India, leverages genomics and artificial intelligence to map drug resistance in TB and represents the most extensive collection of MTB genome sequences from India. The drug resistance and mutation data derived from these genomes are now available on the InTGS web portal (http://intgs.nii.ac.in/InTGS/index.php), providing a valuable resource for researchers, clinicians, and policymakers. Further, a user-friendly AI/ML-based tool (TB-AMRpred) has been developed to predict antibiotic resistance using genomic data and is currently being validated.

The consortium includes JIPMER Puducherry, Hinduja Mumbai, BJGMC Pune, BMMRC Hyderabad, PGI Chandigarh, CCMB Hyderabad, NIBMG Kalyani, NITRD New Delhi, St. John's Medical College Bangalore, NEIGRIHMS Shillong, and ICGEB New Delhi, coordinated by BRIC-NII, New Delhi.

Impact: This achievement by the InTGS consortium marks a significant step toward strengthening India's TB control efforts. By mapping the genetic diversity of *Mycobacterium tuberculosis* strains across the country, we can pave the way for precision medicine approaches and innovative therapeutic strategies.

Breakthrough 4

Animal Biosafety Level-3 (ABSL-3) Facility for Non-Human Primates at the Primate Research Centre, BRIC–National Institute of Immunology

This state-of-the-art facility marks a significant advancement in India's biomedical research capabilities. As only the second such facility in the country, and among a very limited number globally, it represents a major boost to India's preparedness against emerging infectious diseases.

Future Goals

- Vaccines and therapeutics for infectious diseases and emerging pathogens
- Precision Medicine: Advancing predictive, preventive, personalized and participatory healthcare regimens
- Augmenting and scaling programs for improving the understanding of disease biology
- for improved therapeutics and diagnostics
- Programs for integrated traditional and modern medicine approaches for comprehensive,
- evidence-based health care system
- Advancing and integrating technological methods for omics data collection and analysis

Overall Expenditure

Particulars	**FY 2023-24**	**2024-25**	**2025-26**
Overall Expenditure	**1,00,84,47,000/-**	**1,09,33,69,000/-**	**1,05,51,00,000/-**

Q25. What are the measures taken by DBT to promote public awareness and understanding of biotechnology? **(Nodal officers)**

DBT promotes public awareness of biotechnology through seminars and conferences, student outreach under Science Setu, and Open Day programmes, along with participation in science festivals and exhibitions. Awareness is further strengthened through Annual Reports, brochures, and magazines, and wide dissemination via websites and social media.

Public understanding is further enhanced through proactive media engagement, including regular interaction with print, digital, and broadcast media to communicate scientific advances in an accessible manner. Media briefings, press releases, expert interactions, and coverage of major research outcomes and national initiatives help amplify the reach of biotechnology research and its societal relevance.

The recently launched BioE3 Design Challenge of DBT is a national initiative aimed at engaging students, innovators, and startups to develop innovative, sustainable, and scalable biotechnology solutions to address societal and industrial challenges. The challenge promotes design thinking, interdisciplinary collaboration, and translation of biotech ideas into deployable solutions—a way to further enhance the public understanding of the broad spectrum of biotechnology research.

Q32. Kindly provide the details of existing sanctioned strength, in-position strength and vacancies in the Department (scientific, technical and administrative staff separately), along with PSUs/CPSEs/Autonomous Bodies under the Department. When was the last recruitment exercise conducted? What is the impact of manpower shortage, if any, on the functioning of the Department and PSUs/CPSEs/Autonomous Bodies under the Department? How the Department is planning to overcome this issue. **(Nodal Officer of BRIC, BIRAC, ICGEB, RCB, BIBCOL & IVCOL and DBT Establishment)**

As regards BRIC-NII is concerned, the requisite information as on date, is given as under:-

SI.No	Cadre	Sanctioned strength	In-position	No. of live vacancies	No. of posts proposed for revival
1.	Scientific	55 (including 01 post of Director)	29	12	14
2.	Technical	109	57	45	7
3.	Administrative including support staff	96	61	29	6

(b) The Institute had advertised some administrative, technical and scientific cadre vacancies in 2025 and recruitment for 02 posts amongst the advertised vacancies have been completed in November, 2025 and the incumbents have also joined the Institute. Further, the recruitment of the remaining vacancies is ongoing.

(c) The Institute has been facing difficulties in performing the scientific research/administrative work with the limited manpower and has been making an effort to fill the remaining advertised vacancies at the earliest to overcome the issue of manpower shortage.

Annexure 1

Technology transfer (Last 5 years)

S. No.	Name of Technology	Year of Transfer	Name of Industry
1.	Novel Cancer associated antibodies and their use in cancer therapy	2023	Mahatma Gandhi University of Medical sciences and technology, Jaipur
2.	Novel immunotherapeutic method for treatment of cancer	2023	Mahatma Gandhi University of Medical sciences and technology, Jaipur
3.	Novel immunotherapeutic method for treatment of cancer	2023	Mahatma Gandhi University of Medical sciences and technology, Jaipur
4.	Collagen based formulation for osteoarthritis treatment	2021	Purobien Lifesciences Pvt. Ltd., Delhi

Consultancy provided (Last 5 years)

Sl. No.	Details	Signing date	Valid till
1.	Consulting Agreement between NII and Bharat Serums and Vaccines Ltd. Mumbai.	19.09.2025	18.03.2026
2.	Consulting Agreement between NII and Aevum Bio Labs Private Limited, Hyderabad	19.09.2025	18.12.2025
3.	Consulting Agreement between NII and M/s. HeteroChem InnoTech Private Limited, Dwarka, Delhi.	29.09.2023	8.12.2023
4.	Consulting Agreement between NII and *Bharat Biotech International Limited,* Hyderabad.	13.04.2022	12.10.2022

Annexure-II MoUs/Agreements with private sector in last 5 years

	Details	**Signing date**	**Valid till**
1.	Memorandum of Understanding (MoU)between NII and Trisamya	17.12.2025	16.12.2030
2.	Consulting Agreement between NII and Bharat Serums and Vaccines Ltd. Mumbai.	19.09.2025	18.03.2026
3.	Consulting Agreement between NII and Aevum Bio Labs Private Limited, Hyderabad	19.09.2025	18.12.2025
4.	Memorandum of Understanding (MoU)between NII and Otsuka Chemical(India) Pvt. Ltd.	01.04.2025	31.03.2028
5.	Memorandum of Understanding (MoU)between NII and Q-Line Biotech Pvt. Ltd.	11.04.2025	10.04.2028
6.	Memorandum of Understanding(MoU) between NII and M/s. Medtherapy Biotechnology(India) Private Limited.	18.10.2023	17.10.2026
7.	Consulting Agreement between NII and M/s. HeteroChem InnoTech Private Limited,Dwarka, Delhi.	29.09.2023	8.12.2023
8.	Memorandum of Understanding (MoU)between NII and Palumur Biosciences Pvt. Ltd.	29.03.2023	28.03.2026
9.	Memorandum of Understanding (MoU)Between NII and MGUMST, Jaipur Raj.	24.03.2023	06.10.2024
10	Memorandum of Understanding (MoU)Between NII and MGUMST, Jaipur Raj.	24.03.2023	6.02.2027
11	Memorandum of Understanding (MoU)Between NII and MGUMST, Jaipur Raj.	24.03.2023	6.02.2027
12	Memorandum of Understanding (MoU)Joint research Between JNU, AIIMS, DU and Growdea Technologies Pvt. Ltd and NII	01.09.2022	30.08.2026
13	Consulting Agreement between NII and *Bharat Biotech International Limited,* Hyderabad.	13.04.2022	12.10.2022
14	A license agreement with Purobien Lifesciences Pvt. Ltd. for transferring a technology relating to collagen based formulation for osteoarthritis treatment.	22.02.2021	22.02.2024
15	A MoU with Purobien Lifesciences Pvt. Ltd. for collaborative research in the area of Alzheimer's disease for scale-up and development of formulations.	22.2.2020	22.2.2023

16	An agreement between NII and Cadila Pharmaceuticals for collaborative R&D related to *Mycobacterium W*. This agreement has premise of previous agreements signed between NII and Cadila	20.03.2020	21.09.2024
17	An MoU has been signed with Yenepoya University for collaborative research	07.02.2020	07.02.2023

Annexure 3

PUBLICATIONS WITH IF 2023-2024

1. Ahmad M, Jha B, Bose S, Tiwari S, Dwivedy A, Kar D, Pal R, Mariadasse R, Parish T, Jeyakanthan J, Vinothkumar KR*, Biswal BK* (2023) Structural snapshots of *Mycobacterium tuberculosis* enolase reveal dual mode of 2PG binding and its implication in enzyme catalysis. **IUCrJ**. 10:738-753. IF. 5.588
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Reviews

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Dr. Banya Kar PRO <banya.kar@nii.ac.in>

Fwd: [Secy-goi] Rajya Sabha Unstarred Question D. No. S3917 for 12/12/2025 regarding "Takedown Notices by the Union Government"

Dr. Banya Kar PRO <banya.kar@nii.ac.in> Wed, Dec 3, 2025 at 4:48 PM
To: Vamsi Krishna Addanki <vk.addanki@nic.in>
Cc: "Director, NII, New Delhi" <director@nii.ac.in>, "D.K. Vashist, Senior Manager" <vashist@nii.ac.in>

Dear Dr Vamsi,
Please find the responses from BRIC-NII for the **Rajya Sabha Unstarred Question D. No. S3917 for 12/12/2025 regarding "Takedown Notices by the Union Government"**

Takedown Notices by the Union Government

(a) the number of content takedown orders issued under Rule 3(1)(d) of the Information Technology Rules during the last five years by Union Government officials, year wise categorized by issuing authority; and

NIL

(b) the details of the legal provisions cited in these orders in the last five years, with a breakdown by specific statute and sections invoked?

NIL

Best regards,

Banya

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Lok Sabha Provisionally Admitted Unstarred Parliament Question Diary No. 17777 regarding "Biosafety Labs"

(a) the number of Biosafety Level-3 (BSL-3) and Biosafety Level-4 (BSL-4) laboratories sanctioned and those currently operational in the country, State-wise and district-wise in Andhra Pradesh;
BRIC-NII has two BSL3 laboratories operational and two ABSL3 facilities.

(b) whether the Government has allocated and released funds for the establishment of such laboratories and if so, the details thereof, State-wise and year-wise;
A project for establishing an ABSL3 facility for small experimental animals for emerging bacterial and viral pathogens has been approved.

(c) the details of research studies currently being undertaken by such laboratories, State-wise and district-wise, in Andhra Pradesh;
At BRIC-NII, we have two ABSL3 facilities out of which one ABSL3 facility is dedicated for experiment with Non-Human primates (Rhesus Monkeys) as an experimental model. It is being used to conduct pre-clinical studies for the next generation universal influenza vaccines. The other ABSL3 is dedicated to *Mycobacterium tuberculosis* work using mice as the experimental model towards understanding the host-pathogen interaction and developing newer drugs against the tuberculosis.

(d) the current status and outcomes of such research studies along with the funds released/utilized for the same since its inception, State-wise and year-wise;
We received the RCGM approval for the NHP-ABSL3 facility in 2023. Experiment can be conducted on 18 NHPs at a time in ABSL3 housing.

Funds (Total expenditure for the entire project; ABSL3 experiment is one of the activities): 2023-24: Rs. 85.54 lakhs; 2024-25: Rs. 47.49 lakhs; and 2025-26: Rs. 37.51 lakhs

Current status and outcome: After receiving the RCGM approval for the facility, we obtained the approval for the project objectives from IBSC, IAEC, RCGM and CCSEA before initiating our experiments. At present, we have developed the seasonal Influenza vaccine model in Rhesus Monkeys under the ABSL3 facility. We have completed the Immunogenicity and efficacy studies in ABSL3 with the next-generation universal flu COBRA (Computationally Optimized broadly reactive antigen) candidate vaccine and an in-depth analysis of the various parameters are underway.

Experiments were also conducted for purpose of study related to inhibitors against malaria for investigator from BRIC-NII. The facility was made available for the researchers at BRIC-RCB, Faridabad for the study related to developing inhibitors against the dengue virus.

(e) the details of the major viruses being researched and the key advancements achieved through such research in the areas of epidemic and virus management by such laboratories; and

In the first step, we established the seasonal Influenza virus infection model in non-human primates (NHPs), mainly Rhesus Monkeys that are found in India. For this purpose, we employed Inf A/Brisbane/02/2018 strain of the influenza virus. The virus stocks are stored in a box with two layers of protection and an explicit label on it. The box is stored in -80 °C freezer in the BSL3 facility with a biohazard sign on the freezer. This freezer has access only to authorised persons. Further, only the trained and authorised person has entry to the BSL3 laboratory, with one more layer of entry permission required for the entire ABSL3 facility. Key Achievements:

1. Established a seasonal Influenza infection model in Rhesus monkeys under ABSL3 facility.
2. Conducted Immunogenicity and efficacy studies with next generation universal flu COBRA (Computationally Optimized broadly reactive antigen) candidate vaccine and currently analyzing and corelating the results of this experiment.
3. Experiments were conducted for the study related to inhibitors against the malaria.
4. Facility was also made available to researchers at BRIC-RCB, Faridabad for study related to developing newer drugs against Dengue Virus. Experimental phase is over and data is being analyzed by the investigators.

(f) whether the Government has taken steps to expand the network of BSL-3 and BSL-4 laboratories in the country and, if so, the details thereof along with the targets proposed and the timeline likely to be taken for the same

Currently BRIC-NII, New Delhi is expanding capabilities and establishing a dedicated wing for the Virology and Bacteriology related BSL3 laboratories. The construction and third-party validation for this newly established facility is expected to be completed in a coming year.

Lok Sabha Provisionally Admitted Unstarred Parliament Question Diary No. U2405 due for answer on 04.02.2026 regarding "Animal-borne Diseases"

Responses from BRIC-National Institute of Immunology

a). Whether in recent years there has been a sudden increase in animal borne diseases in the country;

Nil

b). if so, the details thereof and the reasons for such increase;

Nil

c). whether new diseases affecting humans are primarily emerging from pathogens originating in animals or animal-derived products, and if so, the details thereof; and

Nil

d). the details of the efforts being made by the Government, department-wise, for the development of vaccines in this regard?

The BRIC-National Institute of Immunology (BRIC-NII) is advancing the development of two next-generation, fully indigenous vaccine candidates. These efforts are guided by insights from human immunology studies conducted in Indian populations and are focused on major animal-borne diseases of national importance—Japanese encephalitis and dengue.

BRIC-NII is also currently working with EU research groups in a collaboration to develop two next-generation influenza vaccines: 1. Computationally optimised broadly reactive antigen (COBRA) vaccine, and 2. Antigen-presenting cell targeting DNA (APC-mix) vaccine. These universal next-generation vaccines will be able to provide protection to humans from any emerging strains of the influenza virus, including strains emerging from pigs or birds.

Lastly, there have been efforts at BRIC-NII to make a protein-based, serotype-independent pneumococcal vaccine. Two candidates have been identified that show promise.

Lok Sabha Provisionally Admitted Unstarred Parliament Question Diary No. U2405 due for answer on 04.02.2026 regarding "Animal-borne Diseases"

Responses from BRIC-National Institute of Immunology

a). Whether in recent years there has been a sudden increase in animal borne diseases in the country;

Nil

b). if so, the details thereof and the reasons for such increase;

Nil

c). whether new diseases affecting humans are primarily emerging from pathogens originating in animals or animal-derived products, and if so, the details thereof; and

Nil

d). the details of the efforts being made by the Government, department-wise, for the development of vaccines in this regard?

The BRIC-National Institute of Immunology (BRIC-NII) is advancing the development of two next-generation, fully indigenous vaccine candidates. These efforts are guided by insights from human immunology studies conducted in Indian populations and are focused on major animal-borne diseases of national importance—Japanese encephalitis and dengue.

BRIC-NII is also currently working with EU research groups in a collaboration to develop two next-generation influenza vaccines: 1. Computationally optimised broadly reactive antigen (COBRA) vaccine, and 2. Antigen-presenting cell targeting DNA (APC-mix) vaccine. These universal next-generation vaccines will be able to provide protection to humans from any emerging strains of the influenza virus, including strains emerging from pigs or birds.

Lastly, there have been efforts at BRIC-NII to make a protein-based, serotype-independent pneumococcal vaccine. Two candidates have been identified that show promise.

PROVISIONALLY ADMITTED UNSTARRED QUESTION DY. NO 2269
REGARDING "**ZOONOTIC DISEASE"**

a) whether the Government proposes to set up Virus Research and Diagnostic Laboratory (VRDL) under Indian Council of Medical Research-National Institute of Virology (ICMR-NIV) in the country, and if so, the details thereof, district-wise;
Not Applicable for BRIC-NII

b) The details of VRDL working at present in the country, State/UT-wise and district-wise, along with the proposal to set up new laboratories therefor;
Not Applicable for BRIC-NII

c) whether it is a fact that the number of known Viral Species has risen from 213 in 1971 to over 15,000 in 2023 in the country, and if so, the details thereof;
Not Applicable for BRIC-NII

d) The details of the achievement of the Government in fighting emerging pathogens such as NIPAH Virus, Monkeypox, Crimean-Congo Haemorrhagic Fever, West Nile Virus and H5N1 in the country; and

BRIC-NII has supported efforts against emerging pathogens through the following contributions:

- Using a computational biology approach, researchers at BRIC-NII have identified drug-like compounds targeting the DNA polymerase of the monkeypox virus.
- BRIC-NII is also engaged in the development of vaccines for H5N1 and H1N1 using an NHP BSL3 facility in collaboration with the EU and other institutions in India.

e) The details of the action taken by the Government and coordinate result-oriented Research for Recurring Collaboration between the Medical, Veterinary and Environmental sectors to fight against the Zoonotic Disease in the country?

- BRIC-NII is engaged in a long-standing collaboration with premier medical centers (AIIMS, New Delhi; Assam Medical College, Assam) and regional epidemiology units (ICMR-Regional Medical Research Center, Assam, North-East India) to investigate humans interaction with zoonotic emerging pathogens such as Dengue virus and Japanese encephalitis virus, with a focus on developing efficient vaccines and preventive strategies.

- BRIC-NII is also the lead coordinator for Indian partners under the Indo-European collaborative “Horizon-2020” that is focused on the development of next-generation influenza vaccines.
- In another project, BRIC-NII is evaluating the efficacy of drug-like compounds targeting the DNA polymerase of the monkeypox virus in Vero E6 cells, in collaboration with DRDE, Gwalior.

Rajya Sabha PQ No. 4257

1. **Research Infrastructure (All Directorates; BIRAC, Autonomous Institute)**

No. of institutions and No. of Departments in institutes where research infrastructure was created/upgraded:

(a) 2004–2014: Mass Spectrometers, NMR Spectrometers, Confocal Microscopes, Atomic Force Microscope, Scanning and Transmission Electron Microscopes, High Throughput DNA Sequencer, Flow Cytometers, Dual wavelength X-ray Generator, X-ray device for in vivo imaging**,** BSL III

(b) 2014–2025: Confocal Microscopy Facility, Mass Spectrophotometry Facility, FACS Facility, Next Generational Sequencing Facility, NMR Facility, Scanning and Transmission Electron Microscopes, Dual wavelength X-ray Generator, Small Animal Imaging with X-Ray, Micro CT, BSL III, ABSL3 facility for non-human primates, Central Instrumentation Facility

2. **International Cooperation (GLOBAL INNOVATIONS)**

Total no. of international collaborations:

(a) 2004–2014: 146

(b) 2014–2025: 172

SL No	Financial Year	No of International Collaborations
1	2004-2005	12
2	2005-2006	14
3	2006-2007	14
4	2007-2008	16
5	2008-2009	15
6	2009-2010	17
7	2010-2011	12
8	2011-2012	14
9	2012-2013	12
10	2013-2014	15
11	2014-2015	10

12	2015-2016	16
13	2016-2017	20
14	2017-2018	20
15	2018-2019	15
16	2019-2020	16
17	2020-2021	21
18	2021-2022	13
19	2022-2023	14
20	2023-2024	10
21	2024-2025	11

Year	No. of International Agreements
2004-2014	5
2014-2025	6

Public Relation Officer (PRO office) <pro_cell@nii.ac.in>

Fwd: [Noticeboard.dbt] Request for inputs for Rajya Sabha Provisionally Admitted Starred Parliament Question Diary No. S10882 due for answer on 02.04.2026 regarding "Allocation for Scientific Research and Development".

Banya Kar, PRO, NII <pro_cell@nii.ac.in> Tue, Mar 24, 2026 at 3:45 PM
To: Kakali Dey Dasgupta <kakali.dey@nic.in>
Cc: director <director@nii.ac.in>, Director Secretariat <dirsec@nii.ac.in>, "Vashist, Senior Manager" <vashist@nii.ac.in>

Dear Dr Dasgupta,
Please find below the inputs from BRIC-NII for part (c) of **Rajya Sabha Provisionally Admitted Starred Parliament Question Diary No. S10882**
(c) the steps taken to increase public funding for basic and applied research in public institutions and universities.
Apart from the Core Institutional Funding, the faculty of BRIC-NII apply for grants in basic and applied research given by other governmental funding agencies of the country like ANRF, CSIR, BIRAC, ICMR, DST, etc. Currently, we have 65 such grants/projects at BRIC-NII.

Best regards,
Banya
[Quoted text hidden]

NATIONAL INSTITUTE OF IMMUNOLOGY
NEW DELHI

Minister of SCIENCE AND TECHNOLOGY

(a) whether the Department of Biotechnology (DBT) has developed or funded protocols for validation of non-animal alternatives such as organ-on-chip, 3D tissue models, or in vitro systems for use in regulatory or toxicological testing;

Reply NII has not developed any validation protocols for Non animal Alternatives such as organ on chips, 3D tissue models, or in vitro systems for use in regulatory or toxicological testing.

At NII, the majority of research for pre-clinical work are initially conducted *in vitro* on the cell lines and *ex vivo* studies. Only after validating the compound or drug effects on the cell lines, the animal models are used for further validation as per approval of IAEC. All efforts are made to minimize the number of animals.

(b) if so, whether DBT has engaged with regulatory authorities like CDSCO or CPCSEA to facilitate the recognition and adoption of these alternatives;

Reply Not applicable.

(c) whether the Ministry has created or is planning to create a national repository or publicly accessible database of validated non-animal testing methods, if so, the details thereof;

Reply Not applicable.

(d) whether DBT's funding guidelines for research projects and biotech startups include provisions that mandate or incentivise the use of non-animal methods wherever scientifically feasible, if so, the details thereof; and

Reply Not applicable.

(e) the number of startups or private research institutions supported by DBT or BIRAC in the past five years for developing or commercialising cruelty-free testing technologies, and whether any international collaborations exist in this area?

Reply Not applicable.