



NABS *News Letter*

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From the Desk of the President.....



Dear NABSians,

Greetings.

After the successful conduct of Annual General Body Meeting and 8th NABS-National Seminar at University of Mysore, during August 2015, 9th National Conference with the theme, “New Biological Researches: Opportunities and Challenges for Sustainable Development (*Agriculture, Biology, Energy, Environment, Health and Climate Change*)” is proposed to be held at one of the prestigious educational institutions of the country, Madurai Kamaraj University, Madurai, Tamil Nadu for two days from 11 to 12 August 2016. The themes opens up opportunities for almost all the members of NABS and other biologists of the country. I earnestly appeal to all the members to contribute papers and enrich the deliberations.

“Each one can teach ten” holds good for enrolling new membership for NABS too. Each member can convince ten of his/her colleagues to enroll as a life member. Membership is the strength of the Academy. Academy throws open lot of opportunities for the young biologists for their active participation and contribution for the development of biological science.

As usual, our GB meeting and conferment of awards and Fellowships would be the main event during the Madurai Conference. I look forward to the active participation of all members.

(V. A. Parthasarathy)
President, NABS

2. Message from Vice-President...



UN declared 2015 as “International Year of Soils”. Fertile soil is vital for human survival. Ninety nine per cent of the world food comes from crops grown in soil and livestock maintained on it. Soil is alive and supports a variety of flora and fauna. The United Nations (UN) declared 2010 as the International Year of Biodiversity. It is estimated that at least a quarter of the earth's biodiversity is found in soil. The biodiversity in soil ranges from microorganisms to small and large invertebrates and small mammals. Soil organisms are responsible for many ecosystem services like nutrient cycling, plant growth, control of pests and diseases, degradation of wastes and harmful chemicals, water and climate regulation, production of food, fuel, etc. FAO in December 2012 in an International Workshop on “Managing Living

Soils” held at Rome initiated the Global Soil Partnership programme to project globally the importance of sustainable soil management to meet food security.

The European Union in 2013 decided to bring out a Global Soil Biodiversity Atlas. Scientists working on different groups of soil flora and fauna across the globe were invited to contribute on their area of specialization. More than 100 scientists from 26 countries have contributed to this Atlas. The Atlas has 8 chapters and 176 pages. The Global Soil Atlas was released on May 23, 2016 at Brussels, Belgium. The Global Soil Biodiversity Atlas raises awareness on the role of soil organisms in sustaining life on our planet, and presents the latest research on soil biodiversity. The Atlas has beautiful photographs and writing in a language which can be followed by common man. Soil biodiversity which is critical for soil functioning and plant production has been largely ignored in global and regional policies that address land management, food security, climate change and desertification. Policies to protect and value soil biodiversity are urgently needed. The Atlas is an essential reference to understand and appreciate the incredible world under our feet. The Atlas can be obtained from European Union Publication office. EU Book Shop website (<http://bookshop.europa.eu/en/home/>) can be contacted for a free soft copy of the same or a hard copy priced Euros 33.

I had the privilege of the only Indian scientist invited to be a Working Committee Member of the FAO initiative on Global Soil Partnership programme contributing to sustainable soil management using microorganisms and also the only Indian Scientist invited to contribute to the Global Soil Biodiversity Atlas. I acknowledge and thank the Almighty God for the grace and blessings He has manifested on me to serve the young scientists interested in biology. I wish the young and enthusiastic biologists a great success in their career.

(D.J. Bagyaraj)
Vice-President

3. Message from the Editor...



Greetings from NABS!

The 9th National Conference on “New Biological Researches: Opportunities and Challenges for Sustainable Development” will be held at Madurai Kamaraj University, Madurai, Tamil Nadu from 11 to 12 August 2016. I sincerely believe that this conference will help us in prioritizing issues in agriculture, biology, energy, environment, health and climate change. Besides, I also hope that this conference will witness the confluence of great minds besotted with providing valuable insights into developing viable solutions to ensure sustainable development. Apparently, it is important to stabilize the academy by encouraging more such interactions and motivating the members to explicitly share their suggestions and views that can promote the betterment of NABS. Therefore, I request you take your seat along with your colleagues, peers, experts and speakers to explore the opportunities and challenges shaping biological research in the current scenario. •It is pleasing to note that we have collectively made great headway towards transforming this academy into a more vibrant one. Thanks to the untiring efforts and the stable and well-directed targets of NABS, we have been growing from strength to strength and facing the challenges enthusiastically. As we step into a new phase of growth, let us continue to rely on our collective strength, unstinting support and new gained confidence to bring fresh perspectives to reinvent and differentiate ourselves in the scientific realm. Let me also hope we realize the vision of the founder President to publish a Journal in the years to come.

(M. Anandaraj)
Editor, NABS NL

4. News and Events

4.1. Ninth NABS National Conference

National conference with the theme “New Biological Researches: Opportunities and Challenges for Sustainable Development (*Agriculture, Biology, Energy, Environment, Health and Climate Change*)” is proposed to be jointly organized by National Academy of Biological Sciences and School of Energy, Environment and Natural Resources, Madurai Kamaraj University, Madurai at MK University, Madurai for two days from 11 to 12 August 2016. Dr. K. Muthuchelian, Fellow of NABS, Head & Chairperson, School of Energy, Environment and Natural Resources and Former Vice-Chancellor, Periyar University, Salem will be the organizing Secretary of the Conference.

4.2. Superannuation of Dr. Renu Agrawal

Dr. Renu Agrawal, EC member of NABS superannuated on October 2015. On behalf of the NABS family we extend a warm greetings for a happy, healthy and wellness filled retired life.

4.3. Superannuation of Dr. M. Anandaraj

Dr. M. Anandaraj, Editor, NABS-News letter & Director, ICAR-Indian Institute of Spices Research, Calicut, Kerala superannuated on 31 March 2016. On behalf of the NABS family, we extend a warm greetings for a happy, healthy and wellness filled retired life.

4.4. Superannuation of Dr. Utpala Parthasarathy

Dr. Utpala Parthasarathy, Technical Officer of ICAR-Indian Institute of Spices Research, Calicut, Kerala & NABS Fellow & NABS-Best Woman Scientist Awardee superannuated on 29 February 2016. On behalf of the NABS family, we extend a warm greetings for a happy, healthy and wellness filled retired life.

5. Awards, Recognitions, Honors received by members of NABS / Activities of the members

5.1. Awards, Recognitions and Honors

Congratulations to all the NABSians who received awards and recognition from various institution and organizations in the country and outside during 2015-16.

Name of Member	Name of Award /Recognition received
Dr. M. Anandaraj	■ Accepted the offer of Editor, Current Science Association after his superannuation from the Post of Director, ICAR-Indian Institute of Spices Research, Calicut, Kerala.
Dr. V. Balakrishnan	■ Received Young Scientist of the Year Award 2015 by International Foundation for Ecology and Environment, Kolkata.
Dr. Brahma Singh	■ Received Fellowship of International Society for Noni Sciences for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.
Dr. Kirti Singh	■ Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.
Dr. T. Marimuthu	■ Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.
Dr. N. Mathivanan	■ Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.
Dr. S. Nakkeeran	■ Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. V. A. Parthasarathy

- Nominated as member of the Advisory Group for upcoming Horticulture University in Haryana.

Dr. SM Paul Khurana

- Chairman of Review Committee for reviewing Horticultural Research in Tamil Nadu Agricultural University, Coimbatore.

Dr. K. V. Peter

- IPS Recognition award (2015) conferred on him during 6th International conference held during February 2016.

Prof. P. I. Peter

- Award of Honor from CCRI, Nagpur for virus detection methods developed on potatoes at CPRI.

Dr. K. Pradhan

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. M. Prakash

- Received 'NONI RATNA' award from International Society for Noni Science during the inaugural function of Second World Noni Congress held on 19 March 2016 at SRM University, Tamil Nadu.

Dr. R. Prakashkumar

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. D. P. Ray

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. Renu Agrawal

- Awarded Fellowship of Indian Society for Plant Physiology during International Congress of Plant Physiology held at New Delhi on 11 December 2015.

Dr. A. Sajeena

- Awarded with "Eminent Scientist Award (2016) by International Foundation for Environment & Ecology and Confederation of Indian Universities, for the overall contributions in Life Sciences.

Dr. (Mrs.) Sangeeta Srivastava

- Received Fellowship of Gregar Mendal Foundation.

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. K. Sankari Meena

- Appointed as Advisor to outreach program at CFTRI, Mysore after her superannuation in October 2015.

- Awarded fellowship of Society of applied Biotechnology (FSAB); Association of Microbiologists of India (FAMI); International society of Biotechnology (FISBT)

- Holds a Co-chair in Department of science and Technology, Govt. of India from 2016-2019 for nurturing young scientists and Technologists.

- Received Second best poster award in 6th International conference organized by Indian Phytopathological Society during February, 2016 at New Delhi.

- Received Fellowship of Uttar Pradesh Academy of Agricultural Sciences (UPAAS), Lucknow during 4th March, 2016 at CSUA&T, Kanpur for outstanding contribution in the field of Agricultural Research

- Selected as Member, National Academy of Sciences, Allahabad (MNASc) since 16 June 2015.

- Conferred with Dr. (Mrs.) Jagadiswari Rao Women Scientist award - 2015 by Applied Zoologist Research Association (AZRA) during XV AZRA International Conference held in February, 2016 at Ethiraj College, Chennai, India

Dr. P. Selvam

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. Shripad Kulkarni

- Conferred with 'Scientist of the year 2015' award by International Foundation for Environment and Ecology, Kolkata.

Dr. D. R. Singh

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. S. Sithanatham

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. M. Srinivasa Rao

- Visiting Scientist to Department of Geography, University of Liverpool Liverpool, UK.

Dr A. K. Srivastava

- Received "Dhiru Morarji Memorial Award" from Fertilizer Association of India
- Awarded with "Distinguish Scientist Award (2014) for outstanding contribution and recognition in the field of Agriculture during 2015.
- Awarded Certificate of Merit by Association of National Agricultural Journalists for meritorious contribution in citrus nutrition by ANAJ-India during 2015 at Nagpur.
- Elected as Secretary of Indian Society of Citriculture, Nagpur, Maharashtra *w.e.f.* January 2015.

Dr. J. Subramani

- Received Fellowship of International Society for Noni Science for 2015 during AGM of ISNS held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Prof. M. S. Swaminathan

- Received Honorary Fellowship of International Society for Noni Science for 2015 during inaugural function of Second World Noni Congress held on 19 March 2016 at SRM University, Kattankulathur, Tamil Nadu.

Dr. Varughese George

- Conferred with Fellow of National Ethnopharmacology (FNSE)
- Conferred with Fellow of Indian Association of Biomedical Scientist (FABM)
- Conferred with Fellow of Royal Society of Chemistry (FRSC)
- Bestowed with Mar Philoxinos Best Scientist Award (2015) for contribution made to Natural Product Chemistry.
- Scroll of Honor awarded by Kerala State Council for Science, Technology and Environment (2016) for contribution made to Phytochemistry.

Dr. T. P. Velavan

- Appointed as Scientific Coordinator (President du Conseil Scientifique), Fondation Congolaise pour la Recherche Médicale (FCRM), Brazzaville, Republic of Congo
- Associated Scientist and Senior Lecturer, Vietnamese Military Medical University, Ha Noi, Vietnam.

Dr. Yashpal S. Malik

- Conferred with Fellowship of Society of Applied Biotechnology-(FSAB 2015).
- Mid-career Award (2015) of Indian Society for Veterinary Immunology and Biotechnology (ISVIB) for the research work.
- Holds the post of Secretary, Indian Virological Society (Animal Virology).

Note: Full address of members is available in website of NABS [www.nabsindia.org]

5.2. Activities of members

5.2.1. Organizing Second World Noni Congress

- The Second World Noni Congress with the theme, “Noni and Medicinal Plants for Inclusive Growth and Wellness” organized by International Society for Noni Science (ISNS), World Noni Research Foundation (WNRF), Noni Biotech, Chennai and Department of Biotechnology, SRM University, Kattankulathur, Tamil Nadu at SRM University from 19 to 21 March 2016 was a grand success.
- The untiring work of Dr. Kirti Singh, President, ISNS as General Chairman, Prof. P. I. Peter, Vice-President, ISNS as Chairman of Local Organizing Committee, Dr. P. Rethinam, Member of RAB of WNRF as the General Editor of the Congress, Dr. K. V. Peter, Director, WNRF as the Organizing Secretary, Dr. T. Marimuthu, Secretary, NABS & Additional Director, WNRF and Dr. S. ThyagaRajan, Professor & Head, Department of Biotechnology, SRM University as Joint Organizing Secretaries of the Congress and an array of NABSians, Noni family members, Students and Faculties of SRM University led to the successful conduct of the Congress.
- Prof. M. S. Swaminathan, Founder Chairman, MS Swaminathan Research Foundation, Chennai inaugurated the Congress and delivered inaugural address. Dr. T. P. Ganesan, Pro Vice-Chancellor, SRM University presided.
- Dr. Kirti Singh, President, ISNS presided over the valedictory function and Dr. Prem Nath, Chairman, PN Agricultural Science Foundation (PNASF) delivered valedictory address.

5.2.2. Dr. K. Kanimozhi

- Resource Person- : Entrepreneurship Programme on Edible Mushroom Cultivation Technology. Department of Training & Placement, Jairams Arts and Science College, Karur, held on 16 October 2015.

5.2.3. Dr. SM Paul Khurana

- Dr. SM Paul Khurana inaugurated National conference on Plant and Animal Molecular Biology and a delivered a Plenary lecture at Mody University, Sikar (Rajasthan) on 25 September 2015.

5.2.4. Dr. T. P. Velavan

- Funder: German Academic Exchange Service (DAAD) (57140033); Project: DAAD-PAGEL Partnerships for the health sector in developing countries - Vietnam (As PI) Duration: Jan 2015 - Dec 2018 (225000€)

5.2.5. Dr. Jeya Bharathi

- Delivered Guest Lecture on “Research Methodology and project formulation” at Sastra University, Kumbakonam from 22 to 23 June, 2015.
- Conducted training on “Microbial mediated soil nutrient transformation” at TNAU Coimbatore from 2 to 22 September 2015.

5.2.6. Dr. M. Subramanian

- Presided over the function called 'THULLAL' held at the Agricultural College & Research Institute Madurai on 2 April 2016 delivered presidential address and distributed awards to students.

6. Research notes and short communications from members

6.1. Engineered antibody for diagnosis of plant viruses

Plant viruses are important constraints in agriculture in India. Diagnostic test of plant viruses are often conducted using polyclonal antibody (PAb) or monoclonal antibody (MAb). Production of diagnostic antibodies requires live animal that often invites ethical issues. To overcome the difficulties in the traditional process of antibody production, direct over expression of heavy chain (H) and light chain (L) variable peptides (V) of immunoglobulin in *E. coli* was achieved for diagnosis of groundnut bud necrosis virus [GBNV] (genus *Tospovirus*) and papaya ring spot virus (PRSV). The VH and VL of 351 and 360 nucleotides, respectively of PRSV were expressed individually as ~14 kDa proteins in *E. coli*. Both the antibody fragments individually or together detected PRSV efficiently in the crude papaya leaf sap. In case of GBNV, 372 nucleotide of VH and 363 nucleotides of VL were combined into a single chain variable fragment (scFv). The *E. coli* expressed recombinant ScFv antibody to GBNV detected the virus in the field samples of cowpea, groundnut, mung bean and tomato; and differentiated watermelon bud necrosis virus, a close relative of GBNV in the sero group-IV tospovirus. These studies for the first time demonstrated the application of *E. coli* expressed engineered monoclonal antibody fragments in immunodiagnosis of two most important plant viruses in India.

Dr. Bikash Mandal
Advanced Centre of Plant Virology, Division of Plant Pathology,
Indian Agricultural Research Institute, New Delhi 110012, India
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6.2. An inclusive approach to conservation, multiplication and restoration through biotechnology -An Ecosystem Services Facility initiative of MBGIPS

India is one of the 12 mega biodiversity centres with two major hot-spots viz., the Western Ghats/Sri Lanka and the Indo Burma region. Tremendous loss to environment due to pressures on biodiversity like population growth, settlement patterns, accompanying consumerism and industrialization has led to exhaustion of the our environmental capital.

The Malabar Botanical Garden and Institute of Plant Sciences (MBGIPS), which is emerging as a frontline research institution of Kerala State Council for Science, Technology and Environment, Government of Kerala, has prioritized the conservation of diversity of plants at all levels, from aquatic, rare, endangered and threatened (RET) species to species from various agro-climatic zones. This inclusive approach encompasses, collection of species from its centres of diversity, development of ex situ conservatories for each group in their preferred habitats, standardizing an alternate propagation method, establishing an in vitro Gene Bank to protect the valuable genetic resources from climatic changes, large scale micropropagation of endangered plants, and reintroduction into their natural habitat.

A herbal garden / Field Conservatory / Field Gene Bank has been developed for the multiplication and propagation of medicinal RET plants which are now facing the threat of extinction and with the support of the Department of AYUSH, (GoI), important species viz., *Symplocos cochinchinensis* (Lour.) S. Moore ssp. *laurina* (Retz.) Noot. *Acorus calamus*, L., *Baliospermum montanum* Blume, *Celastrus paniculatus*, Willd. *Pseudarthria viscida* W&A, are already under multiplication and conservation.

A tissue culture / micropropagation facility has been established at MBGIPS and important species are being uniformly multiplied in vitro (in glass or under laboratory conditions), this facilitates the introduction and establishment of plants from various agroclimatic zones too. Research on various aspects like reproductive biology, influence of climate change and pollinators is underway to study the reasons leading to the endangered status of RET plants.

The facility serves as an in vitro Gene Bank (IVGB) and currently RET plants like *Acorus calamus* (Vayambu) *Celastrus paniculatus* (Jyothishmati), *Symplocos cochinchinensis* (Pachotti); medicinal plants like *Bacopa moneiri* (Brahmi), *Baliospermum montanum* (Nagadanthi), aquatic plants like *Nymphoides krishnakesara* Joseph & Sivaraj; Orchids like *Vanilla*, *Cymbidium*; species from different agro-climatic zone viz., Flax, Fennel etc., have been established in the IVGB.

Once established in the conservatories, they are multiplied in large numbers and acclimatized or 'hardened' under controlled conditions initially before restoring them to field / natural habitat. *Cymbidium aloifolium* L. plantlets have been acclimatized and *Nymphoides krishnakesara* has been restored to field conditions with initiation of flowering. This technological intervention definitely holds promise in the long term vision and mandate of the MBGIPS, of conserving and restoring back to nature.

Dr. R. Prakashkumar
Director, Malabar Botanical Garden & Institute for Plant Sciences,
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6.3. Development of a Xylanase producing thermoalkalophilic mutant of *Bacillus licheniformis*

The increased application of xylanase for various industries requires an increased enzyme production. The quantitative enhancement requires an improvement of the bacterial strain with optimization of cultural parameters for enhanced productivity. A thermophilic *Bacillus* sp. strain, producing xylanase was isolated from decayed wood and soil sample. Characterization of strain by 16S rRNA analysis established it to be close to *Bacillus licheniformis* KJ842626 with 98% similarity. Studies on production and stability of the xylanase showed that ethyl methane sulphonate (EMS) mutagenesis increased the enzyme activity of mutagenized *Bacillus licheniformis* obtained with 50 mg/ml EMS for 90 min had the maximum xylanase production (28.9U/ml). The mutant is being maintained on culture medium containing xylan plus xylose as the substrate and the stability studies revealed that xylanase from the mutant maintained its activity up to 550C. *Bacillus* produced xylanase is generally having the optimal activity at pH 5.0 to 6.0 but the present one showed optimum activity at pH 7.5, that means there was a shift to basic side having higher potential for industrial use. It also showed immense potential for bleaching of pulp for paper as well as production of xylooligosaccharides and bioconversion of hemicelluloses into fermentable sugars. However, the strain produced not as much xylanase as by the commercial strains. Efforts on aspects like cloning and over-expression of xylanases in this strain can be useful in making xylanase production a commercially viable option.

Moreover this bacterium is potential candidate for basic studies on the genomics and proteomics analysis for understanding the physiology of this thermophilic strain for industrial exploitation.

*Sarika Chaturvedi and S. M. Paul Kburana**

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7. An appeal to contribute for Corpus Fund

Corpus Fund for Prof. S. Kannaiyan Memorial Award is being mobilized. NABS thankfully acknowledge the contributions made by members to Prof. S. Kannaiyan Memorial Corpus Fund [vide list below- continuation]

Sl. No.	Name of contributor	Amount (Rs.)
63.	Dr. R. R. Hanchinal	10,000
64.	M. Subramanian	1,000

- We earnestly appeal to all the rest of the Life members, NABS Fellows / Associate Fellows, Corporate Life Members, Corporate Fellows and well wishers to contribute to this noble cause. The amount may be paid as Cash or through a Demand Draft / Multicity Cheque drawn in favour of National Academy of Biological Sciences payable at Chennai.
- The fund may also be electronically transferred to the Savings Bank account of the Academy held at State Bank of India; Branch: Valmiki Nagar, Chennai-600 041 / Branch code: 11721 / IFS code: SBIN0011721.
- SB Account No. of the Academy: 104 9697 8637

8. Enroll yourself as a member and be a part of NABS

Types of Membership available (one time payment)

A. Life Member	: ₹2,500/- or US\$ 100/-
b. Corporate Life Member	: ₹10,000/- or US\$ 400/-
c. Corporate Fellow	: ₹1,00,000/- or US\$ 4000/-

- Details of Payment : The prescribed membership fee may be paid either as Indian rupee or US \$ or Demand Draft / Multicity Cheque drawn in favor of “**National Academy of Biological Sciences**” payable at Chennai.
- The fee may also be electronically transferred to the SB account of the academy held at State Bank of India, Valmikinagar branch, Thiruvannamiyur, Chennai- 600 041, Tamil Nadu.
- **Account No.: 10496978637 / IFS code: SBIN0011721**
- Down load your application from www.nabsindia.org

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Disclaimer

The authors are responsible for the information related to Research notes and short communications of this issue

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12, Rajiv Gandhi Road, Perungudi, Chennai - 600 096
on behalf of National Academy of Biological Sciences

An appeal to members of NABS

Kindly inform change of address including phone numbers and
E-mail to the Secretary, NABS by E-mail (secretarynabs@gmail.com)

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