

Anexure-A

Composition of the IAEC in Details (24.08.2013-23.08.2016): -

S. No	Name & Address	Designation	Phone & Email
1	Dr. Neeraj Jain, Scientist & Chairperson, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Chairperson	M: 09810446444 neeraj.jain@nbrc.ac.in
2	Dr. Anirban Basu, Scientist & Member Secretary, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Member Secretary	M : 09818622540 anirban@nbrc.ac.in
3	Dr. Nihar Ranjan Jana, Scientist, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Scientist	M : 09971122775 nihar@nbrc.ac.in
4	Dr. Soumya Iyengar, Scientist, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Scientist	Soumya@nbrc.ac.in
5	Dr. Inderjeet Yadav Veterinarian, National Brain Research Centre, Near NSG Campus,	Veterinarian	M : 09899301114 vetincharge@nbrc.ac.in

	NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India		
6	Dr. S. Jayaraman, D2/12, (2 nd Floor), Ardee City, Gurgaon Sector-52 Gurgaon, Haryana-122003 India	Main Nominee	M:09871250558 jayaramanardee@yahoo.com
7	Dr. D.N. Rao, Professor, Department of Biochemistry, All India Institute of Medical Science, Ansari Nagar, New Delhi, India	Link - Nominee	M: 09868592706 O:011-26593545 R: 011-26195609 dnrao311@rediffmail.com dnrao311@hotmail.com
8	Maj General BS Dhillon, VSM, 201, Rose Apartments GH-3, Sector-28, Gurgaon-122009, Haryana, India	Non Scientific Socially Aware Member	M : 9313017248 ballidhillon@gmail.com
9	Dr. Deepak Sharma, Ranbaxy Research Laboratories, R & DV, Plot No. 20, Sector-18, Udhyog Vihar, Gurgaon-125015, Haryana, India	Scientist from outside the Institute	M : 09810299809 Deepak.Sharma@ranbaxy.com

Anexure-A

Composition of the IAEC in Details (07.10.2016-06.10.2021): -

S. No	Name & Address	Designation	Phone & Email
1	Dr. Neeraj Jain, Scientist & Chairperson, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Chairperson	M: 09810446444 neeraj.jain@nbrc.ac.in
2	Dr. Anirban Basu, Scientist & Member Secretary, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Member Secretary	M : 09818622540 anirban@nbrc.ac.in
3	Dr. Nihar Ranjan Jana, Scientist, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Scientist	M : 09971122775 nihar@nbrc.ac.in
4	Dr. Soumya Iyengar, Scientist, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Scientist	Soumya@nbrc.ac.in
5	Dr. Inderjeet Yadav Veterinarian, National Brain Research Centre, Near NSG Campus, NH-8, Nainwal Mode, Manesar-122050, Gurgaon (Haryana), India	Veterinarian	M : 09899301114 vetincharge@nbrc.ac.in

6	Dr. Pawan Kumar, Prof. & Head, Deptt. of Vety. Anatomy, College of Veterinary Sciences, Lala Lajpat Rai University of Veterinary & Animal Sciences, Hisar-125004, Haryana	Main Nominee	M: 9466402637 pawanrajoria2000@rediffmail. com
7	Dr. Sudhir Chhabra S/o. Shri. Satiender Kumar, 95, Green Park, Hisar – 125 001, Haryana	Link - Nominee	M; - 9416270818, drsudhirhisar@yahoo.co.in
8	Dr. B.B. Batra, A- 316, Sarita Vihar, New Delhi – 110 066	Non Scientific Socially Aware Member	M : 09312221428 bbbatra2000@yahoo.co.in
9	Prof. Naresh Kumar Rakha Department of Veterinary Epidemiology & Preventive Medicine, College of Veterinary Sciences, CCS HAU, Hisar-125 004, Haryana LLR University of Veterinary & Animal Sciences, Hisar (Formerly CCS Haryana Agricultural University, Hisar)	Scientist from outside the Institute	M : 09416107942 drrakha@gmail.com

National Brain Research Centre, Manesar 122052

Human Ethics Committee (April 2018)

Dr. N. K. Arora (Chairperson) Executive Director INCLEN Trust, F-1/5, Okhla Industrial Area Phase - 1, New Delhi, Delhi 110020. Tel: 9810110376, 011- 4773-0000. Email: nkarora@inclentrust.org	Dr. Roli Mathur (Co-Vice Chairperson) Scientist-E & Head, ICMR Bioethics Unit National Centre for Disease Informatics and Research (NCDIR), Indian Council of Medical Research, Poojanhalli Road, Off NH, Kannamangala Post, Bangalore- 562110 Direct office:- +91-80-22176301 Mobile: 09810539489 Email: rolimath@gmail.com, mathurr.hq@icmr.gov.in
Prof. Shinjini Bhatnagar (Co-Vice Chairperson) Dean (Clinical Research), Head-PBC, Coordinator-CBD Translational Health Science and Technology Institute NCR Biotech Science Cluster, 3rd Milestone, Faridabad – Gurgaon Expressway, PO box #04, Faridabad – 121001 (HARYANA) Tel No.: +91-129-2876351 Mob No.: 9899014416 Email ID: shinjini.bhatnagar@thsti.res.in	Prof. (Dr.) B. T. Kaul, Chairperson Delhi Judicial Academy, Sector -14, Dwarka, NLUD & DJA Integrated Complex, New Delhi-110078 Ph: 011-28036680 M: 9810894728 Email: btkaul@yahoo.com
Maj. Gen. B.S. Dhillon Army Officer (Retd.) Rose Apartment, GH-3, Sector-28, Gurgaon, Haryana Tel: 9313017248 Email ID: ballidhillon@gmail.com, ballidhillon@hotmail.com	Dr. K. K. Ganguly Scientist-F Division of SBR ICMR New Delhi-110029 Mob: 9868333245 Email ID: kalyanganguly@hotmail.com
Dr. Brahmadeep Sindhu Psychiatrist, Gurgaon Govt. Hospital, Gurugram, Haryana Mob No.: 9811602225 Email ID: bdindhu@gmail.com; PmoGurugram@gmail.com	Dr. Pankaj Seth Professor and Scientist VI, NBRC Mob No.: 9899592444 Email ID: pseth@nbrc.ac.in, pseth.nbrc@gov.in
Dr Subash Khushu.Scientist-'G' & Addl. Director.Head, Division of Radiological Imaging & Biomedical Engg. NMR Research Centre, Institute of Nuclear Medicine & Allied Sciences(INMAS),Brig. S.K. Mazumdar Road Delhi-110054.India.Phone: 0091-11-23916741 (Office) 0091-11-23981899 (Residence) Mob No. 9868163222 EmailID:skhushu@yahoo.com	Dr. Shiv Kumar Sharma (Member Secretary) Professor and Scientist VI, NBRC Mob No. 9871102839 Email ID: sharmas@nbrc.ac.in,

**MINUTES OF THE 15th MEETING OF INSTITUTIONAL BIOSAFETY COMMITTEE (IBSC) OF
NBRC HELD ON AUGUST 17, 2016 AT 12:00 NOON AT NATIONAL BRAIN RESEARCH CENTRE,
MANESAR**

The 15th Institutional Bio-Safety Committee of NBRC meeting was held at NBRC Conference room on August 17, 2016. The meeting was chaired by Dr. Nihar Ranjan Jana, nominated by Director NBRC, and attended by Dr. Ayub Qadri (NII, New Delhi), the DBT nominee and Dr. Parthaprasad Chattopadhyay (AIIMS, New Delhi), the external member, and by Prof. Prasun K. Roy (Biosafety officer), Dr. Pankaj Seth (Member Secretary), Dr. Anirban Basu (Member) and Dr. Sourav Banerjee (Member).

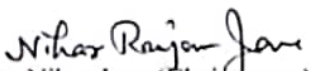
- 1) The meeting started with a welcome note by Chairman to all the members of Institutional Biosafety Committee by Chairperson IBSC, Dr. Nihar R Jana. Dr. Jana informed the IBSC members that the institute and its researchers are committed towards safe use of research protocols. Further, Prof PK Roy, the Biosafety officer, informed the members that the biosafety class would be conducted for the new batch of students along with other researchers by Dr. Sourav Banerjee in 4th quarter of 2016. Prof. Roy then informed the committee that NBRC laboratories practice Biosafety procedures that are broadly based on CDC and DBT Biosafety guidelines.
- 2) DBT nominee, Dr. Ayub Qadri, external expert, Dr. Partha Chattopadhyay and all the other IBSC members expressed their satisfaction and appreciation for the biosafety procedures followed at NBRC.
- 3) Member Secretary, IBSC, Dr. Pankaj Seth apprised the committee of ongoing projects at NBRC and that updated IGMORIS forms are being obtained from PIs that will soon be communicated to RCGM/IBSC office at DBT.
- 4) Dr. Seth apprised the IBSC members that an evaluation process is being evolved for the attendees of the biosafety classes. It was unanimously decided that the same will be inducted into the academic schedule of the NBRC course work along with orientation classes to ensure that the biosafety classes are held and attended by the new students every year. It was also decided in the meeting that a test comprising multiple choice questions be introduced from this year to assess the attendees of the biosafety class and only successful attendees would be allowed into the laboratories, all the IBSC members supported this decision. Dr. Sourav Banerjee volunteered to take up this task of conducting the annual Biosafety classes as well as conducting a test after the training/biosafety classes every year after the new graduate students join NBRC. It was also decided if there will be need this exercise may be carried out twice a year to cover the high turnover of project assistants. It was decided that Dr. Banerjee may take help from other members of IBSC, if necessary, to develop a question bank and conduct the exam in December 2016.
- 5) The IBSC members discussed two new projects to be initiated by laboratories of Dr. Saumya Iyengar, and Dr. Anirban Basu. The protocols were discussed in length and the members found the protocols in order and the required safety procedures were listed in the submitted protocols. The proposals included objectives/specific aims of the funded project. Similarly, and Dr. Iyengar's project involved use of pLVTHM lentiviral vector that will be procured from commercial sources and used in Song birds. Dr. Basu's proposal involved studies on neurogenic potential of exosomes derived from immortalized MSCs and to understand if they can pass through the BBB and to understand if they have any therapeutic potential against virus induced damage.
- 6) All the members of the committee agreed a dedicated space in animal house would be required and arrangements of a Biosafety hood was also recommended. It was reiterated that as decided in the earlier meetings (12th IBSC), the animals undergoing lentiviral and AAV interventions would need to be housed in marked and isolated rooms in consultation with animal house in-charge to which the PIs agreed. IBSC recommended - three member subcommittee comprising Chairman IBSC, Member

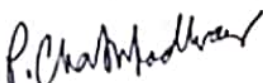
secretary IBSC and Chairman/Member secretary IAEC should ensure that a dedicated room is available in animal house for experiments with lentiviral vectors. It was emphasized that proper training should be given to the animal house staff that would be handling such animals and the procedures should be made in consultation with Animal house in-charge, before such experiments are initiated. Dr. Banerjee volunteered to train people for use of lentiviruses and AAV, if approached by respective PIs.

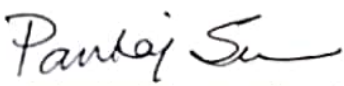
Need of a separate freezer in animal house for storing the carcasses of animals inoculated with viral constructs before their incineration was discussed again. Dr. Banerjee was requested to follow-up the matter with NBRC administration for its early procurement. IBSC recommended that the freezer for storing carcasses be made available in animal house without any further delay.

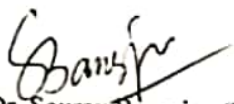
A few minor modifications were suggested in protocols submitted by the PIs which they incorporated after the meeting and resubmitted to member secretary, Dr. Pankaj Seth and the protocols were then approved.

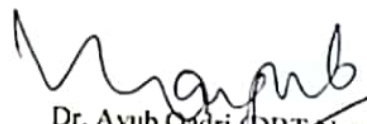
- 7) In addition to the new protocols one the previously approved IBSC protocol (NBRC/IBSC/2013/04) was re-submitted for extension as it was expiring this year after completing its three year validity period. The protocol was extended for another 2 years and will now expire in July 2018 but would carry the same protocol number.
- 8) Following protocols were approved for period of five years:
 - a) The Role of Neuromodulation on Song Learning in Zebra Finches. PI- Dr. Soumya Iyengar [NBRC/IBSC/2016/01].
 - b) Understanding the therapeutic role of adult stem cell derived exosome in combating virus induced neurodegenerative disease. PI - Dr. Anirban Basu [NBRC/IBSC/2016/02].
- 9) Dr. A Qadri and Dr. P Chattopadhyay, the external members were satisfied by the efforts by NBRC scientists for making the Centre a safe working place and expressed their appreciation on the guidelines and procedures being followed at NBRC to address bio-safety issues.
- 10) The meeting ended with a vote of thanks by the chairperson.

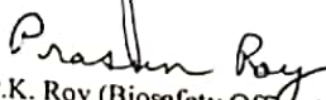

Dr. Nihar Jana (Chairperson)

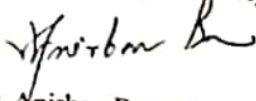

Dr. P. Chattopadhyay (External Member)


Dr. Pankaj Seth (Member Secretary)


Dr. Sourav Banerjee (Member)


Dr. Ayub Qadri (DBT Nominee)


Prof. P.K. Roy (Biosafety Officer)


Dr. Anirban Basu (Member)

**MINUTES OF THE 16th MEETING OF INSTITUTIONAL BIOSAFETY COMMITTEE (IBSC) OF
NBRC HELD ON April 20, 2017 AT 11:00 am AT NATIONAL BRAIN RESEARCH CENTRE,
MANESAR**

The 16th Institutional Bio-Safety Committee of NBRC meeting commenced at NBRC Conference room on April 20, 2017. The meeting was chaired by Prof. Nihar Ranjan Jana, nominated by Director NBRC, and attended by Dr. Ayub Qadri (NII, New Delhi), the DBT nominee and Prof. Parthaprasad Chattopadhyay (AIIMS, New Delhi), the external member, and by Prof. Prasun K. Roy (Biosafety officer), Dr. Pankaj Seth (Member Secretary), Dr. Anirban Basu (Member) and Dr. Sourav Banerjee (Member).

- 1) Prof. Nihar R Jana, Chairman IBSC welcomed all the members of Institutional Biosafety Committee by Chairperson IBSC. Prof. Seth was asked to convene the meeting so he informed the Institutional Biosafety Committee members that the institute and its researchers are committed towards safe use of research protocols. Prof PK Roy, the Biosafety officer, informed the members that the biosafety class was conducted by Dr. Bannerjee as per decision taken in the 15th IBSC meeting. The next biosafety class will be held for the new batch of students along with other researchers of NBRC by Dr. Sourav Banerjee in August 2017. Prof Roy also apprised the members that as done in the past Hepatitis B titres be assessed for all employees of NBRC and employees with low titres should be given a booster dose or the Hepatitis B vaccination in case if they have never taken the vaccination before. Prof. Roy also apprised the committee that NBRC laboratories practice Biosafety procedures that are broadly based on CDC and DBT Biosafety guidelines.
- 2) DBT nominee, Dr. Ayub Qadri, external expert, Prof. Partha Chattopadhyay along with all the other IBSC members expressed their satisfaction and appreciation for the biosafety procedures followed at NBRC.
- 3) Member Secretary, IBSC, Dr. Pankaj Seth informed the committee of ongoing projects at NBRC and that updated IGMORIS forms are being obtained from PIs that will soon be communicated to RCGM/IBSC office at DBT.
- 4) Dr. Seth discussed the need to establish an evaluation process for the attendees of the biosafety classes. It was decided that the same will be inducted into the academic schedule of the NBRC course work along with orientation classes to ensure that the biosafety classes are held and attended by the new students every year. Prof Jana suggested that a question bank should be developed that may be used for questions for the evaluation of attendees and he volunteered to spearhead this task. It was also decided in the meeting that a test comprising multiple choice questions be introduced from August 2017 to assess the attendees of the biosafety class and only successful attendees (those who pass with at least 50% marks) would be allowed into the laboratories, all the IBSC members supported this decision. Dr. Sourav Banerjee volunteered to conduct the annual Biosafety classes while Prof Jana will conduct the test after the training/biosafety classes every year. It was also decided if there will be need this exercise may be carried out twice a year to cover the high turnover of project assistants.
- 5) The IBSC members discussed nine new projects to be initiated by laboratories of Dr. Anirban Basu, Dr. Ellora Sen and Dr. Pankaj Seth. Dr. Basu's protocols required use of Japanese encephalitis virus (JEV) and Zika virus (ZIKV) that can be handled under BSL-2 levels. Dr. Basu provided a copy of relevant pages from CDC Guidelines for Biosafety 5th Edition as well as ICMR guidelines for handling of Zika virus. Dr. Basu also informed the members that the Zika virus work will be done with collaborations with Bharat Biotech Ltd (BBL). He has also mentioned to the committee that at present BBL is the only organisation in the country who has Zika virus available with them. All due precautions required for

JEV and ZIKV experiments will be strictly followed as per CDC and ICMR guidelines for handling Virus.

Dr. Seth's protocol involves only over-expression of Zika virus proteins in human neural stem cells (in case if there is a need for use of live Zika virus infections later, the experiments will be done at Dr. Basu's laboratory under his supervision). Dr. Seth's other protocols involved use of human brain cells, and studies involving exposure of human brain cells to HIV-1 Tat protein or over-expression of Tat using pcDNA 3.1, DsRed Tat, expressing vectors or exposure to hypoxic conditions.

Dr. Ellora Sen's protocols dealt with understanding of inflammation driven regulation of macrophage function and Inflammation regulated metabolic programming in tumor cells. The protocols involved use of siRNA, pGL2 and pcDNA plasmids.

The protocols were discussed in length and all the members were satisfied with biosafety procedures were listed in the submitted protocols. The proposals included objectives/specific aims of the funded project.

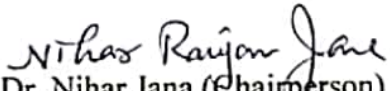
- 6) Three other IBSC protocols that were approved in earlier meetings but were expiring soon were also discussed in the meeting. On the request from the two PIs, Dr. Sourav Banerjee (for two protocols; # NBRC/IBSC/2012/04 and # NBRC/IBSC/2014/02) and Dr. Ranjit Giri (for one protocol # NBRC/IBSC/2015/04) their protocols were discussed among the committee members and extended for two and three years respectively to allow completion of their research work. PIs assured there were no deviation in the methodology used from previously approved protocols.

Dr. Banerjee's protocol NBRC/IBSC/2012/04 will now expire on April 20, 2019 and NBRC/IBSC/2014/02 will now expire on May 5, 2019. Dr. Giri's protocol NBRC/IBSC/2015/04 will expire on April 19, 2020, with no further extension of these protocols. All the three protocols would carry the same protocol number as before.

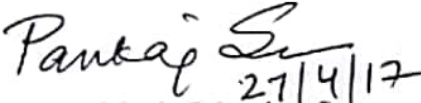
- 7) Following protocols were approved for period of five years:

- a) MicroRNA mediated regulation of neural stem/progenitor cell fate in neurotropic flaviviral infection. PI- Dr. Anirban Basu [NBRC/IBSC/2017/01].
- b) Effect of Zika virus proteins on human neural stem cells. PI- Dr. Pankaj Seth [NBRC/IBSC/2017/02].
- c) Role of Junctophilins in HIV-1 induced neurodegeneration. PI- Dr. Pankaj Seth [NBRC/IBSC/2017/03].
- d) Insights into role of a dyslexia linked long non-coding RNA (lnc RNA) in human neural stem cells differentiation. PI- Dr. Pankaj Seth [NBRC/IBSC/2017/04].
- e) Hypoxia Induced Changes in Blood Brain Barrier. PI- Dr. Pankaj Seth [NBRC/IBSC/2017/05].
- f) Effect of hypoxia on different neural cell types in vitro – a model to elucidate cerebral palsy in preterm infants. PI- Dr. Pankaj Seth [NBRC/IBSC/2017/06].

- g) Differentiation of fetal neural stem cells to oligodendrocytes – a disease model to decipher the pathogenesis and devise therapeutic strategies for cerebral palsy. PI- Dr. Pankaj Seth [NBRC/IBSC/2017/07].
 - h) Understanding inflammation driven regulation of macrophage function: Implications in glioblastoma progression. PI- Dr. Ellora Sen [NBRC/IBSC/2017/08].
 - i) Inflammation regulated metabolic reprogramming: Implications in tumor progression - Unit of excellence in cancer biology. PI- Dr. Ellora Sen [NBRC/IBSC/2017/09].
- 8) Dr. A Qadri and Dr. P Chattopadhyay, the external members were satisfied by the efforts by NBRC scientists for making the Centre a safe working place and expressed their appreciation on the guidelines and procedures being followed at NBRC to address bio-safety issues.
- 9) The meeting ended with a vote of thanks by the chairperson.


Dr. Nihar Jana (Chairperson)


Dr. P. Chattopadhyay (External Member)


27/4/17
Dr. Pankaj Seth (Member Secretary)


Dr. Ayub Qadri (DBT Nominee)


Prof. P.K. Roy (Biosafety Officer)


Dr. Anirban Basu (Member)


Dr. Sourav Banerjee (Member)

**MINUTES OF THE 17th MEETING OF INSTITUTIONAL BIOSAFETY COMMITTEE (IBSC) OF
NBRC HELD ON May 14, 2018 AT 11:00 am AT NATIONAL BRAIN RESEARCH CENTRE,
MANESAR**

The 17th Institutional Bio-Safety Committee of NBRC meeting commenced at NBRC Conference room on May 14, 2018. The meeting was chaired by Prof. Nihar Ranjan Jana, and attended by Dr. Ayub Qadri (NII, New Delhi), the DBT nominee and Prof. Parthaprasad Chattopadhyay (AIIMS, New Delhi), the external member, and Dr. Pankaj Seth (Member Secretary), Dr. Anirban Basu (Member) and Dr. Sourav Banerjee (Member).

- 1) Prof. Nihar R Jana, Chairman IBSC welcomed all the members of Institutional Biosafety Committee by Chairperson IBSC. Prof. Seth convened the meeting and informed the Institutional Biosafety Committee members that researchers at NBRC follow safe practices and follow the laid guidelines. Dr. Seth, informed the members that the biosafety class was conducted by Dr. Sourav Banerjee. A total of 80 researchers attended the class held on August 10, 2018. A multiple choice question (MCQ) based assessment was also conducted after the class for the attendees. All the attendees that took the test passed the exam and the marks have been filed in the IBSC file for records.

The next biosafety class will be held for the new batch of students along with other researchers of NBRC by Dr. Sourav Banerjee in August 2018, and will be a regular feature every year for subsequent years.

- 2) DBT nominee, Dr. Ayub Qadri, external expert, Prof. Partha Chattopadhyay along with all the other IBSC members expressed their satisfaction and appreciation for the biosafety procedures followed at NBRC.
- 3) The IBSC members discussed three new projects to be initiated by laboratories of Dr. Anirban Basu (2 protocols), and Dr. Sourav Banerjee (1 protocol). In addition to the new protocols, one protocol was submitted by Dr. Yogita Adlakha, a DST INSPIRE Fellow, for a minor modification where the PI requested for adding of a project assistant in a previously approved protocol.

Dr. Basu's protocols required use of Japanese encephalitis virus (JEV) that can be handled under BSL-2 levels. Dr. Basu also informed the members that in one of the protocols, the JE work will be done with collaboration with a PI, Dr. Vivek Sharma from BITS-Pilani, Hyderabad campus. All due precautions required for JEV experiments will be strictly followed as per CDC and ICMR guidelines for handling the virus. The other project from Dr. Basu's lab was related to understanding the antiviral properties of statins against JEV infections in a mice model.

Dr. Banerjee's protocol involves investigations of neural development by *in utero* electroporation.

In Dr. Adhlakha's previously approved protocol (NBRC/IBSC/2015/05), name of recently hired project assistant, Ms Asha SC was to be added, that was approved by the committee. Ms Asha is currently working in direct supervision of Dr. Adhlakha, Ms Asha will be attending the next biosafety class that is scheduled to be held in August 2018.

The protocols were discussed in length and all the members were satisfied with biosafety procedures listed in the submitted protocols. The proposals included objectives/specific aims of the funded project.

- 4) Following protocols were approved for period of five years:

a) Elucidating the role of long non-coding RNA (lncRNAs) in neuronal cell death during Japanese encephalitis (JE). PI- Dr. Anirban Basu [NBRC/IBSC/2018/01].

b) Deciphering antiviral properties of statins against Japanese Encephalitis virus infections. PI- Dr. Anirban Basu [NBRC/IBSC/2018/02].

Following protocol was approved for period of three years:

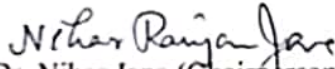
c) Investigations of neural development by *in utero* electroporation. PI- Dr. Sourav Banerjee [NBRC/IBSC/2018/03].

Minor Modification – approved

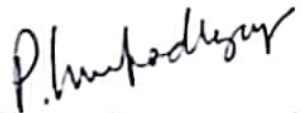
d) Investigation of miRNA-mediated regulation of gene expression in induced pluripotent stem cells: a new approach in regenerative medicine – PI Dr. Yogita Adhlakha [NBRC/IBSC/2015/05-Modified].

5) Dr. A Qadri and Dr. P Chattopadhyay, the external members were satisfied by the efforts by NBRC scientists for making the Centre a safe working place and expressed their appreciation on the guidelines and procedures being followed at NBRC to address bio-safety issues.

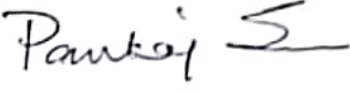
6) The meeting ended with a vote of thanks by the chairperson.

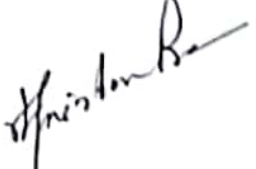

Dr. Nihar Jana (Chairperson)


Dr. Ayub Qadri (DBT Nominee)


Dr. P. Chattopadhyay (External Member)


Dr. Sourav Banerjee (Member)


Dr. Pankaj Seth (Member Secretary)


Dr. Anirban Basu (Member)

**MINUTES OF THE 18th MEETING OF INSTITUTIONAL BIOSAFETY COMMITTEE (IBSC)
OF NBRC HELD ON May 1, 2019 AT 10:00am AT NATIONAL BRAIN RESEARCH CENTRE,
MANESAR**

The 18th Institutional Bio-Safety Committee of NBRC meeting commenced at NBRC Conference room on May 1, 2018. As Prof. Nihar Ranjan Jana has relocated to IIT, Kharagpur, the meeting was chaired by Prof. Anirban Basu (as nominated by Director) and attended by Dr. Ayub Qadri (NII, New Delhi), the DBT nominee and Prof. Parthaprasad Chattopadhyay (AIIMS, New Delhi), the external member, and Dr. Pankaj Seth (Member Secretary) and Dr. Sourav Banerjee (Member).

- 1) Prof. Anirban Basu, Chairman IBSC welcomed all the members of Institutional Biosafety Committee. The meeting was convened by the member secretary. Prof. Pankaj Seth informed the members about the details of biosafety procedures practiced at NBRC that are based on the DBT biosafety guidelines. Dr. Seth, informed the members that the next biosafety class will be conducted by Dr. Sourav Banerjee. A multiple choice question (MCQ) based assessment will also be conducted after the class for the attendees.
- 2) DBT nominee, Dr. Ayub Qadri, external expert, Prof. Partha Chattopadhyay along with all the other IBSC members expressed their satisfaction and appreciation for the biosafety procedures followed at NBRC.
- 3) The IBSC members discussed a total of nine new projects to be initiated by laboratories of Dr. Anirban Basu (1 protocol), Dr. Ellora Sen (1), Anindya Ghosh-Roy (1), Dr. Swagata Dey (1), Dr. Sourav Banerjee (2 protocols), and Dr. Pankaj Seth (3).

Dr. Basu's protocols required use of Japanese encephalitis virus (JEV) that can be handled under BSL-2 levels. All due precautions required for JEV experiments will be strictly followed as per CDC and ICMR guidelines for handling the virus. Funded through extramural funding.

Dr/ Ellora Sen's project involved the use of siRNA, pGL2 plasmids and recombinant DNA technology for reporter gene expression purposes. Funded through extramural funding.

Dr. Ghosh-Roy's project involved generation of transgenic worms (*C. elegans*) using microinjections, and GFP tagged proteins and dsRNA constructs for experimentation. Funded through NBRC core funding, project was presented in SAC and approved.

Dr. Swagata Dey, DST INSPIRE, is working on the project involving *C. elegans* model system and would involve use of pCZGY553 based Pser2-Gateway vector in collaboration with Dr. Ghosh-Roy. Funded through extramural funding.

Dr. Banerjee's protocols involve the use of replication deficient lentivirus and AAV that will be prepared by co-transfection of Transfer vector, packaging plasmids expressing viral core protein of specific serotype (pAAV2.9, pAAV2.1, pAAV2.2 and pAAV2.5) and viral core protein 9pAdDeltaF6) into HEK293T cells. One of the protocols will also involve the use of mouse model.

Dr. Seth's protocols will use Sendai virus - based transduction of PBMCs for deriving iPSCs and use of spCas9 vector from Addgene (Externally funded DBT-RA project). The other protocols will

involve the use of Zika virus protein, clones and transfections of constructs in pCDNA3.1, pDESRED backbones. The third protocol involved over expression of HIV Tat protein in glial and neuronal cells by transfections of constructs in pCDNA3.1, pDESRED backbones. Funded through NBRC core funding, project was presented in SAC and approved.

The protocols were discussed in length and all the members were satisfied with biosafety procedures listed in the submitted protocols.

4) Following protocols were approved for period of five years:

- a) **Deciphering the molecular basis of Japanese Encephalitis virus-induced acute flaccid paralysis; Correlation with motor neuron dysfunction PI- Dr. Anirban Basu [NBRC/IBSC/2019/01].** The PI will be required to submit the IAEC approvals when granted.
- b) **Understanding molecular mechanisms of neuronal development and regeneration in *C. elegans*. PI- Dr. Anindya Ghosh-Roy[NBRC/IBSC/2019/03].**
- c) **Studying cellular and molecular mechanisms of dendrite regeneration using *Caenorhabditis elegans*. PI- Dr. Swagata Dey [NBRC/IBSC/2019/04].**
- d) **Investigating mechanisms of synapse development and function using lentivirus and AAV –mediated gene delivery system for manipulating gene expression in primary neuronal culture. PI- Dr. Sourav Banerjee[NBRC/IBSC/2019/05].** The PI will be required to submit the IAEC approvals when granted.
- e) **Understanding the mechanisms of Zika virus-induced pathogenesis in human brain organoids. PI Pankaj Seth [NBRC/IBSC/2019/08].** The PI will be required to submit the IEC approvals when granted.
- f) **Role of ephrins/eph receptors in HIV mediated neurodegeneration PI Pankaj Seth [NBRC/IBSC/2019/09].**

Following protocols were approved for period of three years:

- g) **Early diagnosis of structural and functional decline in brain circuits stemming from traumatic injuries in professional athletes playing contact sports. PI- Dr. Ellora Sen [NBRC/IBSC/2019/02].** The PI will be required to submit the IEC approvals when granted.
- h) **Investigating mechanisms of memory formation and storage using lentivirus and adeno - associated virus (AAV) –mediated gene delivery system for manipulating gene expression *in vivo*. PI- Dr. Sourav Banerjee [NBRC/IBSC/2019/06].** The PI will be required to submit the IAEC approvals when granted.

- i) **Generation of three-dimensional human brain organoid and its use as model system to study neurodegenerative disorders. PI Pankaj Seth [NBRC/IBSC/2019/07].** The PI will be required to submit the IEC approvals when granted.

- 5) Dr. A Qadri and Dr. P Chattopadhyay, the external members were satisfied by the efforts by NBRC scientists for making the Centre a safe working place and expressed their appreciation on the guidelines and procedures being followed at NBRC to address bio-safety issues.
- 6) The meeting ended with a vote of thanks by the chairperson.



Dr. Anirban Basu (Acting Chairperson)



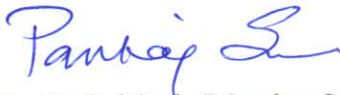
Dr. Ayub Qadri (DBT Nominee)



Dr. P. Chattopadhyay (External Member)



Dr. Sourav Banerjee (Member)



Dr. Pankaj Seth (Member Secretary)

i) Generation of three-dimensional human brain organoid and its use as model system to study neurodegenerative disorders. PI Pankaj Seth [NBRC/IBSC/2019/07]. The PI will be required to submit the IEC approvals when granted.

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Dr. Anirban Basu (Acting Chairperson)

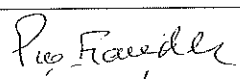
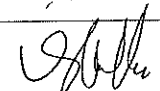
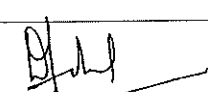
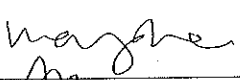
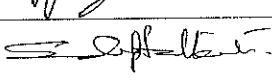
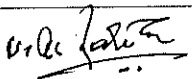
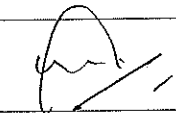
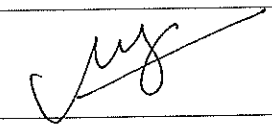
Dr. Ayub Qadri (DBT Nominee)

Dr. P. Chattopadhyay (External Member)

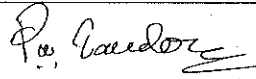
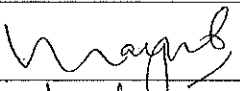
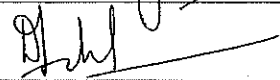
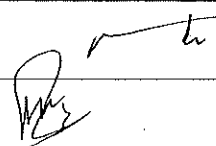
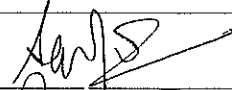
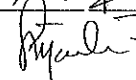
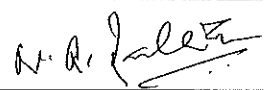
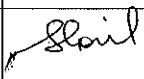
Dr. Sourav Banerjee (Member)

Dr. Pankaj Seth (Member Secretary)

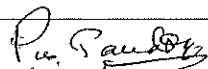
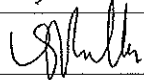
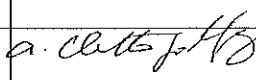
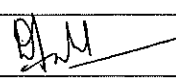
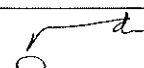
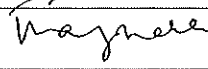
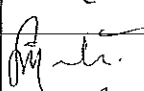
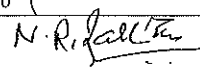
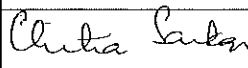
ATTENDANCE SHEET FOR 18th SCIENTIFIC ADVISORY COMMITTEE
MEETING on 07th & 08th February, 2019 at NBRC

Sl No.	Name of the Members	Signature
1.	Prof. P.N. Tandon President, NBRC Society	
2.	Prof. Upinder S. Bhalla Scientist, NCBS, Bangalore	
3.	Prof. K. VijayRaghavan Principal Scientific Adviser to the Government of India, New Delhi	
4.	Prof. Vijayalakshmi Ravindranath Chairperson, IISc, Bangalore	
5.	Prof. Amitabha Chattopadhyay Scientist, CCMB, Hyderabad	
① 6.	Dr. Ayub Qadri Scientist, NII, New Delhi	Attended Only 7 th
① 7.	Prof. Dinakar M. Salunke Director, ICGEB, New Delhi	 (only 7 th)
8.	Prof. Siddhartha Roy Ex-, Biophysics, Bose Institute, Kolkata	
9.	Prof. Jyotsna Dhawan Scientist, inStem, Bangalore	
10.	Prof. Rohit Manchanda Professor, IIT (Bombay), Mumbai	
11.	Prof. B.N. Mallick Professor, JNU, New Delhi	
12.	Dr. V. Rajshekhar Professor and Head, CMC Hospital, Tamil Nadu	
13.	Dr. Sanjeev Jain Head of Department, NIMHANS, Bangalore	
14.	Prof. Sudipta Maiti Professor, TIFR, Mumbai	
15.	Prof. N.R. Jagannathan Head of the Department of NMR and MRI Facility, AIIMS, New Delhi	
16.	Dr. Chitra Sarkar Professor, AIIMS, New Delhi	
17.	Prof. Ajoy Kumar Ray Professor, Indian Institute of Technology, Kharagpur, West Bengal	
② 18.	Dr. Sundeep Sarin Scientific Coordinator of NBRC Adviser, DBT, New Delhi	
19.	Dr. Vinita Chaudhary Nodel Officer of NBRC Scientist, DBT, New Delhi	
① 20.	Dr. A. K. Agarwal (GC Member) Dean, Director, Professor & HOD (Retd.)	Attended on 7/2/19
21.	Prof. Neeraj Jain Director, NBRC	
22.		

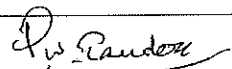
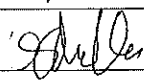
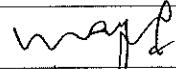
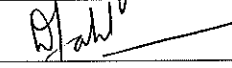
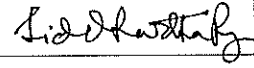
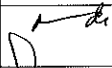
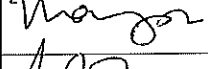
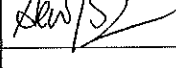
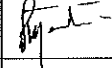
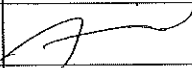
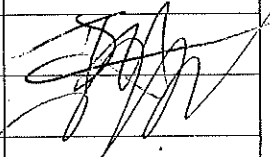
ATTENDANCE SHEET FOR 17th SCIENTIFIC ADVISORY COMMITTEE
MEETING on 28th & 29th November, 2016 at NBRC

Sl No.	Name of the Members	Signature
1.	Prof. P.N. Tandon President, NBRC Society	
2.	Prof. Upinder S. Bhalla Scientist, NCBS, Bangalore	
3.	Prof. K. VijayRaghavan Secretary, DBT, New Delhi	
4.	Prof. Vijayalakshmi Ravindranath Chairperson, IISc, Bangalore	
5.	Prof. Amitabha Chattopadhyay Scientist, CCMB, Hyderabad	
6.	Dr. Ayub Qadri Scientist, IIT, New Delhi	
7.	Prof. Dinakar M. Salunke Director, ICGB, New Delhi	
8.	Prof. Siddhartha Roy Director, IICB, Kolkata	
9.	Prof. Jyotsna Dhawan Sr. Principal Scientist, CCMB, Hyderabad	
10.	Prof. Rohit Manchanda Professor, IIT (Bombay), Mumbai	
11.	Prof. B.N. Mallick Professor, JNU, New Delhi	
12.	Dr. V. Rajshekhar Professor and Head, CMC Hospital, Tamil Nadu	
13.	Dr. Sanjeev Jain Professor, NIMHANS, Bangalore	
14.	Prof. Sudipta Maiti Professor, TIFR, Mumbai	
15.	Prof. N.R. Jagannathan Head of the Department of NMR and MRI Facility, AIIMS, New Delhi	
16.	Dr. Chitra Sarkar Professor, AIIMS, New Delhi	
17.	Prof. Ajoy Kumar Ray Director, IEST, West Bengal	
18.	Dr. Suman Govil Adviser, DBT, New Delhi	
19.	Prof. ARTEL RUIZ i ALTABA Professor, University of Geneva, Switzerland	
20.	Prof. Baroness Susan Greenfield Professor, Oxford University, UK	
21.	Prof. Thomas D. Albright Professor, The Salk Institute for Biological Studies, California, USA	
22.	Michael W. Weiner MD, Director of the Center for Imaging of Neurodegenerative Diseases, UCSF	
23.		

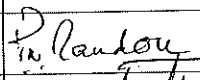
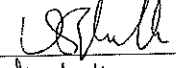
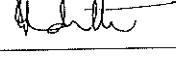
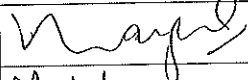
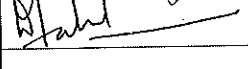
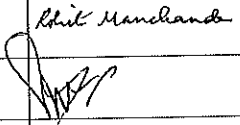
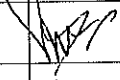
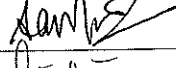
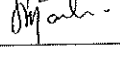
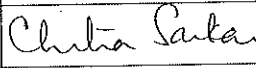
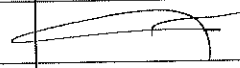
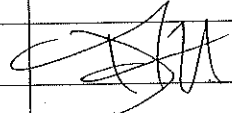
Attendance Sheet of 16th Scientific Advisory Council Meeting of NBRC
Date & Time: 12th January, 2015 at 09:30 AM
Venue: NBRC, Manesar

Sr. No.	Name	Signature
1.	Prof. P.N. Tandon, Chairperson President, NBRC Society	
2.	Prof. Upinder S. Bhalla, Co-Chairperson NCBS, Bangalore	
3.	Prof. K. VijayRaghavan Secretary, DBT, New Delhi	
4.	Prof. Vijayalakshmi Ravindranath, IISc, Bangalore	
5.	Prof. Amitabha Chattopadhyay, CCMB, Hyderabad	
6.	Dr. Ayub Qadri, NII, New Delhi	
7.	Prof. Dinakar M. Salunke, RCB, Gurgaon	
8.	Prof. Siddhartha Roy, ICB, Kolkata	
9.	Prof. Jyotsna Dhawan, InStem, NCBS, Bangalore	
10.	Prof. Rohit Manchanda, IIT Bombay, Mumbai	
11.	Prof. B.N. Mallick, JNU, New Delhi	
12.	Dr. V. Rajshekhar, CMC, Vellore	
13.	Dr. Sanjeev Jain NIMHANS, Bangalore	
14.	Prof. Subrata Sinha Director, NBRC	
15.	Prof. Sudipta Maiti, TIFR, Mumbai	
16.	Prof. N.R. Jagannathan AIIMS, New Delhi	
17.	Dr. Chitra Sarkar AIIMS, New Delhi	
18.	Prof. Ajoy Ray, Bengal Engineering & Science University, West Bengal	
19.	Dr. T.S. Rao Senior Advisor, DBT, New Delhi	

Attendance Sheet of 15th Scientific Advisory Council Meeting of NBRC
Date & Time: 3rd February, 2014 at 10:00 AM
Venue: Heritage Village Resort, Manesar

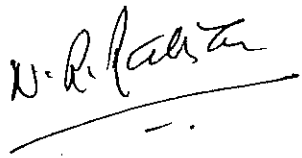
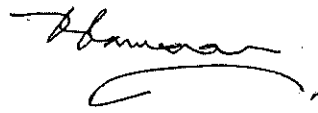
Sr. No.	Name	Signature
1.	Prof. P.N. Tandon, Chairperson President, NBRC Society	
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3.	Prof. K. VijayRaghavan Secretary, DBT, New Delhi	
4.	Prof. Vijayalakshmi Ravindranath, IISc, Bangalore	
5.	Prof. Amitabha Chattopadhyay, CCMB, Hyderabad	
6.	Dr. Ayub Qadri, NII, New Delhi	
7.	Prof. Dinakar M. Salunke, RCB, Gurgaon	
8.	Prof. Siddhartha Roy, IICB, Kolkata	
9.	Prof. Jyotsna Dhawan, InStem, NCBS, Bangalore	
10.	Prof. Rohit Manchanda, IIT Bombay, Mumbai	
11.	Prof. B.N. Mallick, JNU, New Delhi	
12.	Dr. V. Rajshekhar, CMC, Vellore	
13.	Dr. Sanjeev Jain NIMHANS, Bangalore	
14.	Prof. Subrata Sinha Director, NBRC	
15.	Prof. Sudipta Maiti, TIFR, Mumbai	
16.	Prof. N.R. Jagannathan AIIMS, New Delhi	
17.	Dr. Chitra Sarkar AIIMS, New Delhi	
18.	Prof. Ajay Ray, Bengal Engineering & Science University, West Bengal	
19.	Prof. ARIEL RUIZ i ALTABA, University of Geneva, Switzerland	
20.	Prof. Baroness Susan Greenfield, Lincoln College, UK	
21.	Prof. Thomas D. Albright, The Salk Institute for Biological Studies, USA	
22.	Prof. Michael W. Weiner, SFVAMC, UCSF	
23.	Dr. T.S. Rao Advisor, DBT, New Delhi	

Attendance Sheet of 14th Scientific Advisory Committee of NBRC
Date & Time: 23rd November, 2012 at 10:00 AM
Venue: Heritage Village, Manesar

Sl. No.	Name	Signature
1.	Prof. P.N. Tandon, President, NBRC Society	
2.	Prof. Upinder S. Bhalla, NCBS, Bangalore	
3.	Prof. Vijayalakshmi Ravindranath, IISc, Bangalore	
4.	Prof. Subrata Sinha Director, NBRC	
5.	Prof. Amitabha Chattopadhyay, CCMB, Hyderabad	
6.	Dr. Ayub Qadri, NII, New Delhi	
7.	Prof. Dinakar M. Salunke, RCB, Gurgaon	
8.	Prof. Siddhartha Roy, IICB, Kolkata	
9.	Prof. Jyotsna Dhawan, InStem, NCBS, Bangalore	
10.	Prof. K. Vijayaraghavan, NCBS, Bangalore	
11.	Prof. Rohit Manchanda, IIT-B, Mumbai	
12.	Prof. B.N. Mallick, Jawaharlal Nehru University, New Delhi	
13.	Dr. V. Rajshekhar, CMC, Vellore	
14.	Dr. Sanjeev Jain, NIMHANS, Bangalore	
15.	Prof. Sudipta Maiti, TIFR, Mumbai	
16.	Prof. N.R. Jagannathan, AIIMS, New Delhi	
17.	Dr. Chitra Sarkar, AIIMS, New Delhi	
18.	Prof. Ajay Ray, Bengal Engineering & Science University, West Bengal	
19.	Prof. ARIEL RUIZ i ALTABA, University of Geneva, Switzerland	
20.	Prof. Baroness Susan Greenfield, Lincoln College, Oxford University, UK	
21.	Prof. Thomas D. Albright, The Salk Institute for Biological Studies, USA	
22.	Prof. Michael W. Weiner, SFVAMC, UCSF	
23.	Dr. T.S. Rao, Department of Biotechnology, NewDelhi	

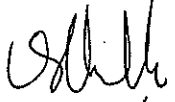
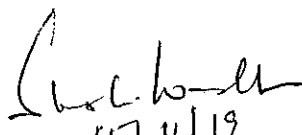
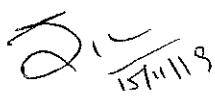
Attendance Sheet

Thematic Scientific Advisory Committee of NBRC to be held on 13th
November, 2019 at 9.30 AM in NBRC

<u>S. No.</u>	<u>Name of Members</u>	<u>Signature</u>
1.	Prof. N. R. Jagannathan J.C. Bose National Fellow (SERB, DST) Vice-President, Indian National Science Academy (INSA) Professor of Eminence, Dept. of Radiology, Chettinad Academy of Research & Education, Kelambakkam, TN 603 103. Visiting Professor, Dept. of Radiology, Sri Ramachandra Inst. of Higher Education and Research, Chennai - 600116. Adjunct Faculty, Dept. of Electrical Engineering, IIT Madras, Chennai Former Professor & Head, Dept. of NMR & MRI Facility, All Institute of Medical Sciences, New Delhi-110029.	
2.	Prof. Sanjeev Jain Molecular Genetics Laboratory Department of Psychiatry National Institute of Mental Health and Neurosciences, Hosur Road Bangalore 560029	
3.	Prof. Ramakrishna Ramaswamy Visiting Professor Department of Chemistry IIT-Delhi, New Delhi 110 016	

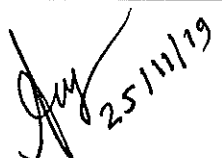
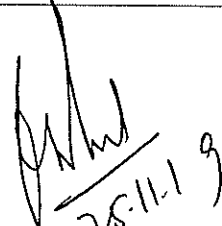
Attendance Sheet

Thematic Scientific Advisory Committee of NBRC to be held on 15th
November, 2019 at 9.30 AM in NBRC

<u>S. No.</u>	<u>Name of Members</u>	<u>Signature</u>
1.	Prof. Upinder S. Bhalla Professor Computational and Experimental approaches to Memory and Plasticity Ground Floor SLC Building National Centre for Biological Sciences GKVK Bellary Road Bangalore- 560065	 15/11/19
2.	Dr. Shashi Wadhwa B-114, Sector-30 NOIDA – 201303 U.P. Mobile: 9910769909 Email: shashiwadhwa@hotmail.com	 15/11/19
3.	Dr. Subash Khushu Formerly: Scientist-'G' & Associate Director Head, Division of Radiological Imaging & Biomedical Engineering NMR Research Centre, Institute of Nuclear Medicine & Allied Sciences (INMAS), Brig. S.K. Mazumdar Road, Delhi- 110054, India Mobile +91 9868163222	 15/11/19

Attendance Sheet

**Thematic Scientific Advisory Committee of NBRC to be held on 25th
November, 2019 at 9.30 AM in NBRC**

<u>S. No.</u>	<u>Name of Members</u>	<u>Signature</u>
1.	Prof. Saumitra Das Director National Institute of Biomedical Genomics P.O.: N.S.S, Kalyani 741251, West Bengal	 25/11/19
2.	Prof. Debi P. Sarkar Professor Department of Biochemistry University of Delhi South Campus Benito Juarez Road, Dhaula Kuan New Delhi-110021.	 25.11.19
3.	Dr. Ayub Qadri Staff Scientist VII National Institute of Immunology Aruna Asaf Ali Marg New Delhi- 110 067	 25/11/19

Attendance Sheet

Thematic Scientific Advisory Committee of NBRC to be held on 28th
November, 2019 at 9.30 AM in NBRC

<u>S. No.</u>	<u>Name of Members</u>	<u>Signature</u>
1.	Prof. Samit Chattopadhyay Director CSIR- Indian Institute of Chemical Biology (IICB) 4, Raja S C Mullick Road, Jadavpur, Kolkata-700032	
2.	Prof. Gaiti Hasan Professor Laboratory of intracellular calcium signaling National Centre for Biological Sciences, TIFR Bangalore 560065	
3.	Prof. Chinmoy Sankar Dey Professor, Kusuma School of Biological Sciences Indian Institute of Technology Hauz Khas, New Delhi 110016	