

Neurovascular Perspectives

Neurovascular Perspectives is the newsletter of the International Society for Neurovascular Disease (ISNVD)

EDITORS

J. Steven Alexander &
Robert Zivadinov

The International Society for NeuroVascular Disease (ISNVD) is a non-profit professional association devoted to furthering the development of research for neurovascular related diseases – including CCSVI. The society will hold annual scientific meetings and sponsor educational and scientific workshops. Target medical groups include, but are not limited to, Vascular Surgeons, Interventional Radiologists, Neurologists, Neurosurgeons, Physicists, and Technologists.



ISNVD

International Society for
Neurovascular Disease

President's Column

Greetings! The year 2016 has seen an explosion in the extent of basic and clinical research focusing on the central contributions of the brains' vascular system and its supporting vessels to the development of diverse forms of neurodegeneration, ranging from neuro-inflammatory diseases to cognitive decline and dementia. Our society, the ISNVD (www.isnvd.org) clearly recognizes the continuing challenges, but also great opportunities in this field of medical research. Our society membership is growing and now includes some of the best recognized national and international leaders (and their students) working in diagnostic and therapeutic modalities for neurovascular disease and its underlying cellular and molecular mechanisms. Only through a close collaboration between doctors, scientists and patients will we effectively translate these findings into effective treatments for neurologic conditions which are being increasingly being understood and accepted as 'neurovascular' in origin.

I am looking forward to serving as the incoming ISNVD president and I would like to again give thanks to all of the biomedical researchers and scientists who helped to bring together the really cutting-edge program we participated in at the New York Academy of Sciences this past April 29th-30th. The caliber of all of the gifted young investigators presentations was outstanding and we were pleased to recognize so many early career scientists. We all look forward expectantly to their future discoveries which they will hopefully share at ISNVD 2017.

The organizers of the meeting would like to recognize the incredible efforts of the

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many staff members who supported this meeting, especially Ms. Kelly Denz without whom this meeting would not have been possible. I personally would also like to recognize Dr. Robert Zivadinov and Dr. Salvatore Sclafani for their courage, stamina and sage leadership, not only since the inception of the ISNVD, but especially this past year in helping to program our meeting as well as helping to transfer our society office to LSU, thank you both. Lastly, we cannot begin say enough to thank the patient participants and their families who gave so generously of their time, commitment and support. In particular, the ISNVD executive committee would like to recognize and thank the Annette Funicello Research Fund for their continuing research support, Ms. Carol Schumacher, Mrs. Sharon Richardson, Mr. Craig Walters, Mr. & Mrs. George Molyneux and Ms. Florence D'Eon.

We are currently planning the 2017 meeting for the society, our 7th which will be held May 4-6th in the historic hillside city of Taormina, Sicily. One of this upcoming years' important neurovascular focus topics is stroke biology. Working closely with our European colleagues, led this year by Dr. Pierfrancesco Veroux, the president of the Congress, we will also include an important clinical training component for the meeting in addition to the regular annual scientific sessions. With your help, we anticipate an even larger attendance for our 2017. Please plan to attend and forward this link (<https://isnvd.org/content/7th-annual-isnvd-scientific-meeting>) to your friends and colleagues as the registration for our next meeting will be opening soon.

With warm wishes,
Dr. J. Steven Alexander
President, ISNVD

Annual Meeting Overview

The 6th meeting of the ISNVD, held in New York City, USA on April 29-30th, 2016 continued with the tradition of bringing together researchers with different expertise coming from all over the world, focusing on the functional and structural alterations of arterial and venous vessels in neurological disorders.

Day one began with Dr. Salvatore Sclafani, Immediate Past President, opening the meeting with his President's address. Dr. Sclafani talked about all of the progress that The ISNVD made while he served as the 2015-2016 President. He also discussed how far our community has come in terms of identifying how vascular and venous stenosis may be a pre-cursor to neurological disease.



(Above: Dr. Salvatore Sclafani opens the congress.)

Session one was chaired by Drs. Alireza Minagar and Felicity Gavins, both from LSU. Dr. Minagar opened up the session by talking about his abstract called, "*Multiple Sclerosis as a Vascular Disease.*" He said that "based on a plethora of evidence from patient-based and experimental observations, he proposes a different view of MS pathophysiology with a main focus of abnormalities of cerebral endothelial cells as the possible origin of MS." He also believes that numerous neuropathological studies support the fact that MS, as a vascular disease, is a venous rather than arterial disease.



(Above: Drs. Alireza Minagar and Steve Alexander from LSU enjoy listening to speakers in session 1 of the congress.)

Session one was titled, "*Snapshots of Neurological Diseases with a Neurovascular Perspective: A Neurologic Point of View.*" Other speakers included in session one were Drs. Chih-Ping Chung, Ronald Lazar, Hai Sun and abstract podium presenter, David Utriainen.

In session 2, the Heart and Brain Axis in Neurodegeneration was discussed. Drs. Robert Zivadinov and Mat Damen chaired this session. Dr. Mat Damen, our keynote speaker from last year, talked about "*The Heart and Brain in Neurodegeneration—an Arterial Perspective.*" Dr. Zivadinov's talk was called "*The Heart and Brain in Neurodegeneration—a Venous Perspective.*" Dr. Zivadinov said that the susceptibility and progression of neurodegenerative disorders may be related to extracranial venous disease. Internal jugular vein (IJV) narrowing has been implicated in central nervous system pathologies, however, normal physiological age-and gender-related IJV variance in healthy individuals and their relationship to brain MRI outcomes has not been adequately assessed. His research will continue on this in the future.



(Above: Dr. Chih Ping-Chung from National Yang Ming University in Taiwan discusses her results with the audience.)

Other speakers in session 2 were Dr. Mat van Buchem as well as abstract presenters Drs. Bernhard Juurlink and Robert Zivadinov who is also an Executive Committee member for The ISNVD.

(Below, podium abstract presenter David Utriainen from Wayne State University presents his data.)



"*Imaging the Microvasculature*" was the focus of session 3 that was chaired by Drs. Mark Haacke and Felicity Gavins. Dr. Haacke, who is also Vice-President of The ISNVD, talked about "*Imaging the Microvasculature using MRI.*" Dr. Gavins spoke about

Annual Meeting Overview

“Imaging Cellular Trafficking in the Neurovasculature.” Dr. Gavins said that post-cerebral ischemia reperfusion (I/R), inflammation results in endothelial cell activation as well as consequent recruitment and activation of leukocytes and platelets. Dr. Gavins discussed these concepts and the technique of fluorescent intravital microscopy to visualize and quantify these cellular interactions. Furthermore, she presented data from her laboratory demonstrating that an absence of the formyl peptide receptor 2 (FPR2/ALX) leads to an aberrant inflammatory response to stroke and that targeting this system may provide a potential therapeutic option for the treatment of ischemic stroke and related forms of brain injury.



(Above: Dr. Mat Daemen from The University at Amsterdam gives his talk.)

(Below: Dr. E. Mark Haacke from Wayne State University (and ISNVD Vice-President) with Dr. Felicity Gavins from LSU who served as the congress vice-chair. Drs. Haacke and Gavins chaired session number 3, “Imaging the Microvasculature.”)



Other speakers that participated in session 3 were Drs. Yulin Ge and Hongyu An. Also, accepted abstracts were presented from Miss Tamara Boltersdorf, Jean-Christopher Brisset, Ph.D. and Giuseppe Palma, Ph.D. Tamara’s abstract was called *“Designing Novel Imaging Probes for Targeting Inflammatory Lesions in Brain Disorders”* and Dr. Brisset’s was called *“Introducing the Next Generation of Microvascular Imaging with a new USPIO-enhanced MRV Approach.”* Dr. Palma spoke about *“the Assessment of an Automated Vein Segmentation Algorithm for MRI Brain Acquisitions at Different Field*

Strengths.” All three abstracts were very well-received by the audience.

On day one from 4:30 p.m.—6:00 p.m., we held our poster session in the main foyer at The New York Academy of Sciences. We had over 15 accepted abstracts that were turned into posters for presentation. All ideas were both creative and novel. The quality as well as content were said to have been “excellent” by The Executive Committee.

(Below left: ISNVD Members congregate for the poster session on day one. Below right: Dr. Ikuo Tsunoda from Kindai University in Osaka, Japan stands by a poster that he co-authored.)



(Above: Dr. Syed Abbas from LSU discusses his findings with Dr. Charles Woodfield from The Upper Cervical Research Foundation in Minneapolis, Minnesota.)

Following the poster session, our keynote speaker, Dr. Jonathan Kipnis from The University of Virginia at Charlottesville, United States, talked to the audience about a newer concept called *“Brain drain, meningeal lymphatics and Neurological Disorders.”* Dr. Kipnis is pictured below.



Annual Meeting Overview (Cont'd)



(Above: Dr. Dejan Jakimovski from SUNY Buffalo presents his poster abstract.)

The keynote speaker talk was followed by an opening night cocktail reception in which all of our guests had a chance to network as well as information share.

During the cocktail reception, Carol Schumacher, an Executive Board Member, held a silent auction to raise funds for the Society. Below-pictured are items that were on display at the silent auction.

(Below: Vase was hand-drafted by Dr. Hector Ferral who is a member of The ISNVD Executive Committee.)



The morning of Saturday, April 30th started off early as session 4 opened at 8 a.m. and it was called "Assessment of Brain Hemodynamics in a Clinical Setting." Drs. Paolo Zamboni and Marcello Mancini from Italy Chaired this session.

Dr. Mancini discussed "Evaluation of Cerebral Hemodynamics with Microbubble-Enhanced Ultrasound Imaging and Magnetic Resonance Imaging in MS Patients." Dr. Mancini said that "the morphology and hemodynamics of extracranial and intracranial vessels were evaluated using the measurement of intima-media thickness of carotid artery walls, echo-color Doppler intra- and extracranial cerebral venous district and measurement for cerebral arterio-venous transit time with contrast-enhanced ultrasound. The results of the ultrasound-based imaging modalities of the intra and extracranial district were compared with the alterations of cerebral perfusion and iron deposits studied with MRI and the biochemical and genetic markers of vascular risk.

You can read Dr. Mancini's whole abstract as it is posted on the front page of our website at www.isnvd.org.

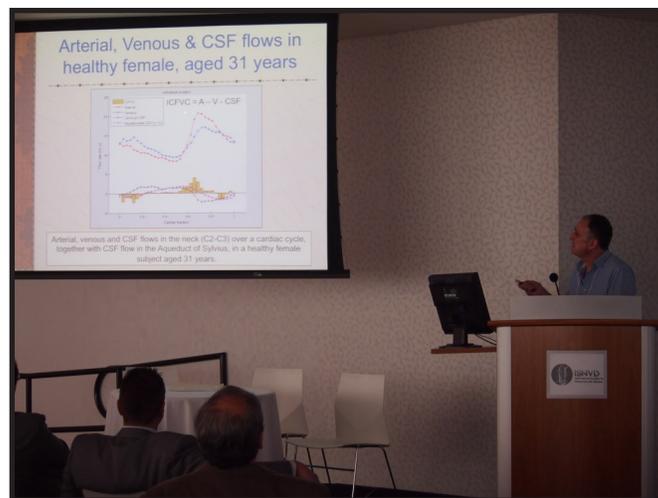
(Pictured below: The Italian contingency.)



Other speakers in session 4 were Drs. Erica Menegatti, Francesco Sisini and Joel Pachter. Accepted podium abstract presentations were given by Drs. Dejan Jakimovski and Noam Alperin as well as Miss Laura Pelizzari.

Session 5 was called "CSF Disturbances, Aging and Neurodegeneration." It was Chaired by Drs. Clive Beggs and Noam Alperin. Dr. Beggs talked about "Cerebral Venous Drainage and its Impact on Cerebrospinal Fluid Motion; A Retrospective Review of the work of the ISNVD."

Other speakers in session 5 were Drs. Noam Alperin, Norman Relkin, Harold Rekate and Grant Batemen. Accepted abstract podium presentations were given by



Drs. Leonard Prouty and Sirin Gandhi.

(Pictured to the right is Dr. Mark Haacke talking to Dr. Nikolaos Liasis about the information presented in session five. Dr. Liasis traveled all the way from Greece to participate in the meeting.)



Annual Meeting Overview (Cont'd)

Session 6 was on Saturday afternoon and it was called “*Vascular Interventions in Neurovenous Disease.*” It was chaired by Drs. Michael Dake and Salvatore Sclafani. Dr. Dake is also an Executive Committee Member. Dr. Sclafani’s talk focused on “*the Reasons for Failure in Neurovenous Interventions.*” Dr. Sclafani said “Patients with neurodegenerative diseases, notably multiple sclerosis (MS), have propensity to venous outflow obstructions of the cerebrospinal venous circulation and that treatment may rapidly show dramatic clinical improvements. Also, “rapid improvements suggest that they are likely related to altering cerebral fluid dynamics, such as enhanced cerebral perfusion, increased dural venous flow and improved CSF drainage rather than reversal of basic pathology.”

Additional speakers in session 6 were Drs. Ivo Petrov, Pierfrancesco Veroux and Hector Ferral. Accepted podium abstract presentations were given by Drs. Ivo Petrov, Aldo Bruno and Pietro Maria Bavera, M.D.

(Below-pictured are Dr. Hector Ferral from Northshore University Health System, Chicago, Illinois, United states and Dr. Ivo Petrov from City Clinic, Sofia, Bulgaria who were both presenters in session six.)



Session 7 was The Annette Funicello Research Projects—an update is given on page 6 of this publication

Session eight was titled, “*Vascular Function, Glymphatic System and New Drug Development.*” Our new President, Dr. Steve Alexander, spoke on “*Alterations in Hemodynamic Flow Patterns and Endothelial Dysfunction in Neurodegeneration.*” Other speakers in this session were Drs. Eleuterio Toro and Marie-Luce Bochaton-Piallat.



(From left: Drs. Paolo Zamboni & Robert Zivadinov, Ms. Carol Shumacher and Dr. Helen Kavnaudias from Melbourne, Australia.)

Accepted abstract speakers in session 8 included Christian Contarino, Dr. Ikuo Tsunoda and Miller Fawaz.



(Above: Beautiful hand-drafted glass figurines of New York’s Chrysler Building were made by Carol Schumacher and her husband, Scott to give out to all speakers. They were a big hit and were very much appreciated by all). (Below: The silent auction continues at The Gala dinner on Saturday night at Barbalu’s Restaurant.)



Board Meetings

During the two day conference, there were two separate board meetings that were held. The two Board meetings included the business meeting.

The first board meeting was held Thursday and the following items on the agenda were discussed:

- Direction the Society is moving in
- Membership drive
- Various committee openings that are open
- Site of next year’s meeting
- Financial status of the Society which is good
- Discussion with patient advocates/sponsors

The second meeting was the annual board/business meeting which was held on Saturday. The following items were discussed:

- Financial status of the Society which is good
- Site of next year’s annual meeting
- Publications
- Committee positions that are open
- Changes/additions to by-laws

Annual Meeting Overview (Cont'd)

AFRND Awards

The Annette Funicello Research Fund for Neurological Disease (AFRFND) joined with the International Society of Neurovascular Diseases (ISNVD.org) in the Fall of 2014 to request proposals in clinical and basic science research into neurovascular disease emphasizing the relationship to multiple sclerosis (MS) and neurodegeneration.

Numerous international submissions were judged by a scientific review panel and four grantees were awarded funding. At this meeting, the winners presented the updated findings of their research.

Melbourne's Dr. Helen Kavnoudias, PhD: A randomized, double-blinded, controlled (with sham) study of percutaneous transluminal angioplasty for extracranial vein stenoses in patients with multiple sclerosis. (Clinical angioplasty treatment trial CCSVI in MS)

Buffalo's Dr. Robert Zivadinov: A case-control, 5-year follow-up study of cardiovascular, environmental and genetic risk factors for disease progression in patients with multiple sclerosis (CEG-MS study).

Milan's Dr. Marcella Lagana PhD: Combined study of neurodegeneration, cerebrovascular reactivity and venous drainage impairments in Parkinson's Disease (PD) and Multiple Sclerosis (CCSVI in PD & MS)

Shreveport's (LSU) Dr. J. Stephen Alexander: 'Diagnostic and prognostic use of neurolymphatic biomarkers in Multiple Sclerosis'. (MS-CCSVI biomarker)

With these grants, the AFRFND takes a substantial step forward in directly supporting sophisticated research into palliating, treating and curing neurovascular diseases, such as MS. Our grant winners represent a remarkably broad range of study, from controlled trials to basic receptor science. All awardees gave updates in regards to the progress of their studies during session 7.

The Annette Funicello Research Fund for Neurological Diseases is a 501(c)3 non-profit and has a specific interest in supporting clinical studies that seek to expose the underlying cause of neurodegenerative diseases like Multiple Sclerosis and therapies that show the promise of reversing disease progression. For more information, go to their website at: www.annetteconnection.com.

Abstract Submissions

This year, The ISNVD annual meeting included more than 100 attendees and 40 invited speakers. In addition to the poster presentation, we also heard abstracts that were selected for oral presentation which all demonstrated outstanding research.

Accepted Podium Abstracts 2016:

- "Longitudinal Magnetic Resonance Imaging of Cerebral Microbleeds in Multiple Sclerosis Patients." - David Utriainen, B.S.
- "Arterial Pulse Pressure Waves Causing Endothelium & Myelin Damage may be a Causal Factor in MS— Bernhard Juurlink, Ph.D.
- "Cerebral Microbleeds in MS; a Case-controlled Study." - Dr. Robert Zivadinov
- "Designing Novel Imaging Probes for Targeting Inflammatory Lesions in Brain Disorders." - Miss Tamara Boltersdorf.
- "Introducing the next Generation of Microvascular Imaging with a new USPIO-enhanced MRAV Approach." - Jean-Christopher Brissett, Ph.D.
- "Assessment of an automated Vein Segmentation Algorithm for MRI Brain Acquisitions at Different Field Strengths." - Giuseppe Palma, Ph.D.
- "Abnormal Posture Control of Internal Jugular Vein Flow is Associated with Brain Atrophy Progression in MS Patients over five years." - Dejan Jakimovski, M.D.
- "Automated Real-Time Quantitative Total Cerebral Blood Flow by Phase Contrast MRI." - Noam Alperin, Ph.D.
- "A semi-automatic Method for Anatomical Measures of the Internal Jugular Veins." - Laura Pelizzari, MSc
- "Discovering the Complex Genetics of Idiopathic Normal Pressure Hydrocephalus." - Leonard Prouty, Ph.D.
- "No Association of Extra-cranial Venous Abnormalities and Clinical Outcomes in MS Patients over five years." - Sirin Gandhi, MBBS.
- "Endovascular Treatment and Stem Cell Therapy of CCSVI." - Ivo Petrov, MD, Ph.D.
- "CCSVI Prevalence in Meniere's Disease and Preliminary Results of Balloon Venous Angioplasty." - Aldo Bruno, MD
- "Multiple Sclerosis and Symptom Changes after PTA: a 4-year regular follow up on 366 Patients." - Pietro Maria Bavera, M.D.
- "First Step Towards a Mathematical Model for the Human Lymphatic System—Christian Contarino
- "Upregulation of Lymphatic Markers and Vascular Adhesion Molecules in CNS RNAseq Transcriptome of a Viral Model for MS." - Seiichi Omura, Ph.D.
- "TBI Severity Quantification and Outcome Prediction Using MRI." - Miller Fawaz, MS

Posters:

- “High Resolution M-Mode Characterization of Jugular Vein Valves in Health Volunteers and in Patients with Neurological Disorders.” - M.E. Vannini
- “Multi-Parametric Algorithm for the Automated Segmentation of Brain Vein—Serena Monti
- “Centralized and local Doppler Sonography Reading Agreement for the Diagnosis of the CCSVI—Marcello Mancini, M.D.
- “Venous Flow Abnormalities Associated with Parkinson’s Disease using MRI” a Pilot Study—Sean Seth, MS
- “Speculation that CCSVI and Related MS is Caused by prolonged, Undetected Vasospasm of the OJV and Azygos Vein—Faro Owiesy, M.D.
- “Rare case of Bi-frontal Ischemic Stroke Resulting from Low Voltage Electrical Injury with Pre-existing Anatomic Variations in Circle of Willis.” - Syed Abbas
- “Comprehensive Cerebral Flows Analyses of MRI Acquired Data following a Chiropractic Intervention of Migraine Subjects.” Dr. H. Charles Woodfield
- “Long-term Follow-up of Multiple Sclerosis Patients Who Underwent Venous Angioplasty: A 5-year Observational Case Series Study.” - Dejan Jakimovski, M.D.
- “Bridging the Gap between Chronic Cerebro Spinal Venous Insufficiency (CCSVI) and Meniere Disease—Dario Alpini
- “Bacterial and Protozoal Metagenomic Analysis of Peripheral Blood in 32 Multiple Sclerosis (MS) Patients by next-generation sequencing—Dr. Stephen Fry
- “De Novo Approach in Treatment of Chronic Migraine and Trigeminal Neuralgia—Faro Owiesy, M.D.
- “Assessing the Biofilm Characteristics and to map the Metagenome in Arterial Plaque.” - Dr. Steven Fry

Award Winners:

- Young Investigator Award**—Christian Contarino
- Best Poster Abstract**—Seiichi Omura
- Best Podium Presentation**—Marcella Lagana
- Best All-around Abstract Submission** – Miss Tamara Boltersdorf

ISNVD 2017 Annual Meeting

It was announced that the 2017 Annual Meeting will be held in Taormina, Italy on May 4-6 and will be hosted by Dr. Pierfrancesco Veroux. Please visit our website at www.isnvd.org for further details.

Thank You

Many thank yous go out to everyone who worked very hard on putting together this conference as well as to those of you who attended. We take great pride in the fact that our 2016 annual meeting was a huge success! Special thank yous go out to Carol and Scott Schumacher for all of their hard work in supporting the conference, Dr. J. Steven Alexander for organizing the agenda, Dr. Robert Zivadinov for supporting the on-site logistics of the conference and Ms. Florence D'Eon and Miss Patricia Leach for contributing their photos for this publication. Lastly, Miss Tara Stokes, a University of Connecticut student who served as a volunteer.

We also owe a large debt of gratitude to our sponsors:

- The Canadian Coalition for the Study of Venous Insufficiency
- The CCSVI Alliance - United States
- The Annette Funicello Research Fund for Neurological Dis.
- The family of Mr. Lafayette Rogan Jones, Jr.
- Barrie Vascular Imaging
- Jeff Beal Music, Inc.
- MR Innovations of Detroit, Michigan

We are eternally grateful. We hope to see everyone again next year!

News & Updates:

Membership Dues:

In the very near future, our new President, Dr. J. Steven Alexander and his office will be reaching out to you to request 2016 membership dues. Membership dues are very important as they are used to help run the operations of The Society. When you receive your membership dues request, it would be very much appreciate it if you would promptly pay them please.

Becoming a Member:

If you are interested in becoming an ISNVD member or know of someone who may be interested, please go to our website at www.isnvd.org for more information or e-mail info@isnvd.org.

Executive Committee Changes:

With the start of a new fiscal year, The ISNVD has just had some recent changes to The Executive Committee. Our new President and Executive Director who was elected last year is Dr. J. Steven Alexander who is a Ph.D. at Louisiana State University's Department of Molecular and Cellular Physiology. Congratulations to Dr. Alexander! Dr. E. Mark Haacke is now serving as Vice-President, Dr. Salvatore Sclafani as Immediate Past President, Pierfrancesco Veroux, M.D. as the 2017 Annual Meeting Chair and Dr. Felicity Gavins as the 2017 Annual Meeting Vice Chair. Dr. Robert Zivadinov has stepped down from his post as Executive Director to focus more on his scientific research. He will continue to serve as a Chairperson. The other continuing Executive Committee Board-members include Ms. Carol Schumacher, Dr. Hector Ferral, Dr. Paolo Zamboni and Dr. Michael Dake. Thank you to Dr. Zivadinov for all of his hard work, service and contributions!

Voting:

It has come to The Executive Committee's attention that we are in need of a new President-Elect as this position is now vacant with Dr. Haacke moving on to his role of Vice-President. In the very near future, you will receive more information regarding the nomination process of a new candidate.

Look for website updates!

Please check out our new website updates at www.isnvd.org. Since the annual meeting, we have made many updates including photos of the meeting as well as accepted abstracts. Take a few minutes to go on and see all that is new!

Office location change:

Every three years, the physical location of The ISNVD office changes. Over the last three years, Dr. Robert Zivadinov has housed the office in his Buffalo, New York facilities. The office has recently been moved to the office of Dr. J. Steven Alexander at Louisiana State University in Shreveport, Louisiana, United States. Dr. Alexander also has two Assistants named Gabriella and Colton who will be helping out in the future. You can reach them at JALEXA@lsuhsc.edu.



Above: A view of Manhattan as seen from 7 World Trade Center.



Dr. Salvatore Sclafani passing the gavel to Dr. J. Steven Alexander as incoming ISNVD President.

