

International Anaplastology Association

Living in the Material World

31ST ANNUAL
EDUCATIONAL CONFERENCE

Minneapolis, Minnesota, USA





Welcome

Dear Colleagues,

Welcome friends and colleagues around the world to the 31st Annual Conference of the International Anaplastology Association! The IAA takes pride in sharing knowledge and innovation, and forging a future path in our field. We work together to find solutions that are beyond borders, beyond disciplines and beyond boundaries faced in health care. Our members are committed and passionate about improving the quality of life of our patients and helping them through the rehabilitation of body, mind and spirit.

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It has been an amazing and humbling experience to serve as your President. Thank you for the opportunity to represent such a multidisciplinary and multicultural organization.

I would like to extend my gratitude to our 2017 Minneapolis Conference Co-chairs, Patti Montgomery, Michaela Calhoun and Gillian Duncan, and to our Executive Director, Rachel Brooke, for all of their hard work in planning this year’s conference. We hope you enjoy your experience in Minneapolis, and engage in the collaboration and camaraderie found in the International Anaplastology Association!

Sincerely,

A handwritten signature in blue ink that reads "Suzanne Verma".

Suzanne Verma, MAMS, CCA
IAA President

“The IAA takes pride in working together to share knowledge, spark innovative thinking and forge a path to the future in our field. We work together to find solutions that are beyond borders, beyond disciplines and beyond boundaries faced in health care.”

Program Chair Welcome

Dear Colleagues,

Welcome to the 31st annual conference of the International Anaplastology Association. This year's theme "Living in the Material World" is focused on how our capabilities as anaplastologists empower our patients to be positively perceived in a world focused on beauty and perfection. New advances in the material world of science and technology are changing the facial prosthetic fabrication process. Blending art, science, and technology now includes engineers and bioengineers to create a multidisciplinary team in pursuit of enhancing patient outcomes.

The conference planning committee has done a wonderful job in assembling a diverse program featuring renowned experts that will allow you to experience compassion to innovation. We welcome group participation with an open exchange of ideas and discussions so that we can learn from each other. This is the one time each year that our group of international professionals have the opportunity to meet and share their expertise and ignite ideas to further the future of anaplastology.

I would like to especially thank the IAA board, the conference planning committee, and Rachel Brooke, our Executive Director. This one has been a true team effort! Without all of you I would not have been able to plan and execute this conference from my home town of Houston, Texas to the conference site of Minneapolis, Minnesota.

Speaking of Minnesota, I want to leave you with 10 words you will need to know to communicate with the locals while you are enjoying Minneapolis.

GENERAL PHRASES:

Uff-Da (oo-fh dah): Of Norwegian origin, this phrase is used to express sensory overload. It can be used to express surprise, relief or as an alternative to swear words.

Dontcha Know (doh-nt-cha noh): Literally translated it means "don't you know." However, in Minnesota, it is generally just tagged onto the end of sentences as a way to engage the listener and make sure they are on the same page.

You Betcha (yuu-bet-chah): A form of agreement. Can be, and often is, used in conjunction with "dontcha know."

Oh, for Cute: Minnesotans can't just say how adorable that little tyke or pup is.

Holy Buckets: Like "Jeez Louise" or "For crying out loud," is one of those bastardizations of some stronger curse that's been watered down enough that you could say it in church without some old lady laying an eye on you because she might even say it herself.

FOOD TERMINOLOGY:

Hot Dish: A casserole, only better. True Minnesotans know a hot dish is a special casserole containing a starch (usually tater tots) a protein (hamburger, or SPAM if you are feeling very Minnesotan), some sort of canned, or frozen, vegetable and some sort of "cream of something" soup.

Lutefisk: A Minnesota holiday tradition, dried cod that has been reconstituted in a bath of water and food-grade lye. It's like a gelatinous goo. Travel Channel's Bizarre Food host called it, "one of the worst foods in the world" and that's from a guy who has eaten the intestines of a goose.

Pop: Not "soda," not "Coke." Here, it's "pop."

DIRECTIONS:

Up North: This is a common summer phrase, so visitors should be well versed with this one. It should be noted, Up North is not a directional phrase, as in "just got up north to Highway 35W" — it is a place. "Up North" is where all Minnesotan's cabins are. When someone mentions they are going "up north" it includes any land an hour north, west, east or south of the Twin Cities that has a lake. Which is everywhere.

Kitty-Corner: Diagonally across from. Not "Caddy-Corner" or "Catercorner." If you use those terms people will automatically know you are from out-of-town.

Now that you can talk the talk of Minneapolis, let's talk the talk of Anaplastology with our long time members and first time attendees. Welcome to the fusion of art, engineering, science, technology and the future!

Sincerely,



Pattii Montgomery
Conference Program Chair/IAA, Vice President

Sponsors

Panthera Dental

Headquartered in Quebec City, Canada, Panthera Dental is a world leader in CAD/CAM prosthetic implant solutions and dental sleep appliances.

The rapid growth of the company is based on the values that are very dear to us, namely highly attentive customer care, quality products, as well as innovation, and on its collaboration with many key opinion leaders in the dentistry field.

Both a pioneer and a leader, Panthera Dental has successfully combined creativity, science and know-how to develop its proprietary innovative technology and is now able to offer next-generation products to the dental industry worldwide.

3D Systems

3D Systems offers healthcare-centric 3D printing and 3D visualization technology. The company's surgical tools include accurate 3D printed anatomical models, advanced virtual reality simulators, direct metal printing for implants and instrumentation, virtual surgical planning (VSP®) and personalized 3D printed surgical guides. 3DS is developing true patient-specific healthcare solutions, one by one or at scale, designed to change the future of personalized medicine.

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Gillian F. Duncan, MS, CMI, CCA

Colette Shrader, MA, CCA

Erin Stevens, MS

IAA Social Outing –

RACE MINNEAPOLIS!

Not content to casually stroll the city and take in the sights? Then, this activity was made for you! Join us for Race Minneapolis – designed especially for IAA attendees. You will be divided into teams to compete as your race around the city to obtain a list of items. Expect the unexpected and be creative! And be timely, or be terminated, because the last team to the finish line may be eliminated!

IF YOU REGISTERED to participate in this activity, please meet in the hotel lobby of The Commons Hotel at 3:15 pm on Thursday, June 15 to obtain your instructions! The race will start promptly at 3:30 pm.

IF YOU ARE INTERESTED in participating, but have not signed up yet, please visit the registration desk to inquire about participating before 12:00 pm on Thursday, June 15.

Hospitality RECEPTIONS

Drinks are on us! After a day of education and exploration of Minneapolis, please join us for a cocktail or two located in Summit:

Thursday, June 15, 2017

8:00 pm – 11:00 pm

Friday, June 16, 2017

9:00 pm – 11:00 pm

Welcome RECEPTION

Join us from 6:30 – 8:30 p.m. as we kick off the IAA's 31st Annual Educational Conference! All conference attendees are encouraged to join us for this event.

Continuing Education Credits

Sessions at this conference will earn Continuing Education Units with the BCCA. The BCCA requires that certificate holders acquire their own verification documentation that must include the conference or workshop agenda and one of the following: contact hours, certificate of attendance or a letter from the event sponsor of the course confirming both the dates and hours of attendance. CEU hours for this conference have been calculated by the IAA. The number of CEU credit hours is based upon instructional time, excluding welcomes, introductions, breaks, meals and other non-education events. Following the conference, the IAA will e-mail you a Certificate of Attendance.



3D Printing for Facial Prosthetic Molds

Build accuracy and realism into facial prosthetics production with 3D Systems Precision Healthcare services. This unique service gives anaplastologists and prosthodontists access to the latest technologies to help streamline the process of prosthetic creation. Integrating precise 3D imaging, design expertise and 3D printing technologies, 3D Systems rapidly delivers accurate molds for facial prosthetics.



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IAA Conference Program

June 14 – June 16, 2017

Wednesday, June 14, 2017

Pre-Conference Course Programming

9:00am – 12:00pm	<p>Offsite Pre-Conference Program at Medical Device Center at the University of Minnesota (AM Program)</p> <p>Idea Actualization: Drawing on Digital Resources to Develop an Innovative Product or Device The morning workshop will focus on the comprehensive workflow for medical device creation, from conception to fabrication, that has been developed by the Medical Device Center (MDC) at the University of Minnesota. We will begin with a tour of the facility and labs including 3D scanning, printing, and virtual reality equipment. We will learn about products that the MDC has developed through collaboration between various researchers and specialists.</p> <p>Taking inspiration from the MDC's methods, participants will then workshop the development of an innovative device, methodology, or service of our own, broadening the scope of our project to include resources that are available to any anaplastologist. As a group or in small groups, we will define a product, and outline all actions and resources necessary to actualize that product. We will include information about working with local 3d printing and scanning bureaus, joining maker collectives, and using freeware software to modify digital files. During the workshop, we will also touch on important questions, such as project justification, major objectives, and project sponsorship.</p>
12:00pm – 1:00pm	Lunch for Attendees of Offsite Workshop
1:00pm – 4:00 pm	<p>Offsite Pre-Conference Program at Medical Device Center at the University of Minnesota (PM Program)</p> <p>Face Transplant Donor Restorations From the experiences of the anaplastology and transplant teams who worked on the first face transplant done at the Mayo Clinic in Rochester, Minnesota, this hybrid workshop will inspire anaplastologists to implement donor restoration services into their practices.</p> <p>Meg Rogers, the Director of Transplant Center Relations will first speak to the group about the fascinating and life-giving world of organ procurement and will show the in-depth process that lead to the June 2016 Mayo Clinic face transplant, including the requirements, goals, and outcome of the donor restoration LifeMask. Gillian Duncan and Michaela Calhoun will follow by explaining the process they developed over a two year period for the design and fabrication of the LifeMask as well as their involvement with a local hand transplant team.</p> <p>Goals of the workshop:</p> <ul style="list-style-type: none"> • To learn about developing a partnership between the anaplastologist, transplant team, and organ procurement agency • To participate in a hands-on exercise using the techniques developed by Duncan and Calhoun to create mini LifeMasks. Each participant will leave with a small kit of materials that they can take home and continue to experiment with in order to incorporate the technique into their own workflow.
5:00 pm – 5:30 pm	Poster Set Up
6:30 pm – 8:00pm	Welcome Reception and Poster Session

Thursday - June 15, 2017

Scientific Session and Workshop: Day 1

7:15 am - 8:00 am	<i>Light Breakfast for All Attendees</i>
8:00 am - 8:05 am	President's Welcome
8:05 am - 8:15 am	Welcome
8:15 am - 8:55 am	KEYNOTE - <i>Saving Faces</i> with Mark Gilbert, Ph.D. and patient James E. Van Arsdall, Ph.D.
9:00 am - 9:15 am	Living in the Material World: the Anaplastology Experience of Patients with Vision Loss, Michaela Calhoun, MS, CCA
9:20 am - 9:35 am	High Definition 3D Models for Maxillofacial Rehabilitation from a Mobile Device and Free Software, Rodrigo Salazar Gamarra, DDS
9:40 am - 9:55 am	The Many Facets of an STL File, Juan R. Garcia, MA, CCA
9:55 am - 10:20 am	<i>Coffee Break in Exhibit Area</i>
10:20 am - 10:35 am	The Science of Clinical Lighting for Accurate Color Matching, Paul Tanner, CCA
10:40 am - 10:55 am	Total Mandibular Defect Reconstruction with Nobel Zygomatic Implants Supported Lower Face Prosthesis, Artavazd Kharazyan
11:00 am - 11:40 am	KEYNOTE - Facing the World: the Psychosocial Effect of Facial Disfigurement, Marissa Suchyta
11:45 am - 12:05 pm	Panel Discussion of Morning Presenters
12:05 pm - 12:45 pm	IAA Box Lunch & Legislative Update
12:45 pm - 12:55 pm	Announcements
1:00 pm - 3:00 pm	Sponsor Learning Workshops – <i>free attendance</i>
3:30 pm - 6:00 pm	IAA Optional Social Outing – Race Minneapolis! Not content to casually stroll the city and take in the sights? Then, this optional activity was made for you! Join us for Race Minneapolis – designed especially for IAA attendees. You will be divided into teams to compete as your race around the city to obtain a list of items. Expect the unexpected and be creative! And be timely, or be terminated, because the last team to the finish line may be eliminated!
8:00 pm - 11:00 pm	IAA Hospitality Suite Drinks are on us! After a day of education and exploration of Minneapolis, please join us for a cocktail or two.

Friday - June 16, 2017

Scientific Session and Workshop: Day 2

7:30 am - 9:00 am	<i>IAA Business Meeting & Membership Breakfast – Members Only</i>
7:30 am - 9:00 am	<i>Light Breakfast for All Attendees</i>
9:00 am - 9:05 am	Announcements
9:05 am - 9:45 am	KEYNOTE - Live Bioprinting of Gelatin-Nanosilicate Scaffolds for Rapid Bone Defect Healing Venu G. Varanasi, Ph.D., Texas A&M University Baylor College of Dentistry
9:50 am - 10:05 am	Brief Sponsor Introductions
10:10 am - 10:25 am	Bioengineering and 3D Printing Hybrid Materials for “Smart Prosthetics” and Bio-Integrated Devices - Michael McAlpine, Ph.D., University of Minnesota
10:30 am - 10:55 am	<i>Coffee Break in Exhibit Area</i>
10:55 am - 11:10 am	Evaluation of a Digital Workflow: Treatment Planning, Simulation, and 3D Printing, Amanda Behr, MA, CMI, CCA, FAMI & Shawn McLeod
11:15 am - 11:30 am	The Antibacterial Properties of Silicone Lining Materials, Incorporated with Quaternary-Ammonium Polyethyleneimine (PEI) Nanoparticles - Can It Improve Our Silicone Prostheses? Anat Sharon, DMD, MSc, MHA & Nurit Beyth, DMD, Ph.D.
11:35 am - 11:50 am	The Use of 3D Technology to Scan a Facial Defect, Design the Prosthesis and Print the Final Investment Casts, Denise VeyVoda, MA, DDS, FAAMP
11:55 am - 12:10 pm	Nasal Prosthetic Anatomic Retention: A Safe and Practical Approach, Eric S. Asher, MAMS
12:15 pm - 1:45 pm	Lunch on Your Own
12:15 pm - 1:15 pm	New IAA Board Meeting
1:45 pm - 1:55 pm	Announcements
2:00 pm - 2:15 pm	Stem Cells from Human Deciduous Teeth Associated with a Nanometric Calcium Phosphate Coating to Improve Bone Tissue Regeneratio, Roberto Fanganiello, B.Sc, Ph.D
2:20 pm - 2:35 pm	Coffee Break in Exhibit Area
2:40 pm - 3:10 pm	Panel Presentation – The Future of Anaplastology around the World, Moderated by Suzanne Verma, MAMS, CCA
3:15 pm - 3:30 pm	Closing Remarks
6:00 pm - 9:00 pm	IAA Banquet: 80s Rewind Break out your best eighties because we’re turning back the clock for a TOTALLY AWESOME night. Dust off your leg warmers and tease up your hair at the McNamara Alumni Center for the Annual IAA Banquet!

Pre-Conference Course Attendees

TRANSPORTATION NOTICE

If you are registered to participate in the Pre-Conference Course programs, please meet in the lobby of The Commons Hotel at following times to secure transportation to the Medical Device Center:

For FULL DAY and MORNING Pre-Conference Course attendees

Please meet at 8:40 am to begin departing to the Medical Device Center.

For AFTERNOON Pre-Conference Course attendees

Please meet at 11:40 am to begin departing to the Medical Device Center.

Please note that all Pre-Conference Course attendees will receive lunch at the Medical Device Center. At the conclusion of lunch, the morning only attendees will depart back to the hotel. At 4:00 pm, the full day and afternoon only attendees will depart back to the hotel.

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IAA Conference Program Abstracts

CONFERENCE PROGRAM: PRE-CONFERENCE COURSE

Wednesday, 9:00am – 12:00pm

ATTENTION! Pre-Conference Course Morning Attendees:

Please meet in the lobby of The Commons Hotel at 8:40 am to start departures to the Medical Device Center.



Idea Actualization: Drawing on Digital Resources to Develop an Innovative Product or Device

OFFSITE PRE-CONFERENCE PROGRAM
AT MEDICAL DEVICE CENTER AT
THE UNIVERSITY OF MINNESOTA

Presenters:

**Michaela Calhoun, MS, CCA, Erin Stevens, MS,
Sean Rittenhause, Laser Design Inc. and
Steven Thomalla, Medical Devices Center, University of Minnesota**



The morning workshop will focus on the comprehensive workflow for medical device creation, from conception to fabrication, that has been developed by the Medical Device Center (MDC) at the University of Minnesota. We will begin with a tour of the facility and labs including 3D scanning, printing, and virtual reality equipment. We will learn about products that the MDC has developed through collaboration between various researchers and specialists.

Taking inspiration from the MDC's methods, participants will then workshop the development of an innovative device, methodology, or service of our own, broadening the scope of our project to include resources that are available to any anaplastologist. As a group or in small groups, we will define a product, and outline all actions and resources necessary to actualize that product. We will include information about working with local 3d printing and scanning bureaus, joining maker collectives, and using freeware software to modify digital files.

During the workshop, we will also touch on important questions, such as project justification, major objectives, and project sponsorship.

About the Presenters

Michaela Calhoun, MS, CCA is a certified clinical anaplastologist living and working in the Twin Cities area of Minnesota. After earning a Bachelor of Fine Arts and a Master of Science degree in Biomedical Visualization at the University of Illinois at Chicago, she moved back to her native upper Midwest and joined the team at Prosthetics at Graphica Medica, LLC in January 2011. Michaela is also the current Chair of the Walter Spohn Educational Fund (WSEF) Committee, a group that administers grants and supports educational research in the field of prosthetic rehabilitation. Through her work as a clinical anaplastologist and in her capacity as a member of the WSEF, she hopes to continue her support of high quality clinical care and scientific research in the field of anaplastology.

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Erin Stevens obtained a Master of Science in Biomedical Visualization at The University of Illinois at Chicago, where she received training in anaplastology at The Craniofacial Center. Her research explored the reliability of 3d stereophotogrammetry in its application for capturing facial landmarks. In 2012, Erin returned to UIC's Craniofacial Center as a visiting anaplastologist. She then went on to pursue her passion for fundraising and advocacy work, leading a number of initiatives to increase awareness and financial support for the field of Anaplastology. In January of 2017, Erin joined her colleague Michaela Calhoun at Prosthetics at Graphica Medica in the Twin Cities area of Minnesota. In addition to facial prosthetics, Erin and Michaela aim to make breast and partial hand and foot prostheses more accessible to patients in Minnesota area.

CONFERENCE PROGRAM: PRE-CONFERENCE COURSE

Wednesday, 1:00pm – 4:00 pm

ATTENTION! Pre-Conference Course Afternoon Attendees:

Please meet in the lobby of The Commons Hotel at 11:40 am to start departures to the Medical Device Center so that you are there in time for lunch.



Face Transplant Donor Restorations

OFFSITE PRE-CONFERENCE PROGRAM AT MEDICAL DEVICE CENTER AT THE UNIVERSITY OF MINNESOTA

Presenters

Gillian Duncan, MS, CMI, CCA, Michaela Calhoun, MS, CCA and Meg Rogers, LifeSource, Director of Transplant Center Relations

From the experiences of the anaplastology and transplant teams who worked on the first face transplant done at the Mayo Clinic in Rochester, Minnesota, this hybrid workshop will inspire anaplastologists to implement donor restoration services into their practices.

Meg Rogers, the Director of Transplant Center Relations will first speak to the group about the fascinating and life-giving world of organ procurement and will show the in-depth process that lead to the June 2016 Mayo Clinic face transplant, including the requirements, goals, and outcome of the donor restoration LifeMask. Gillian Duncan and Michaela Calhoun will follow by explaining the process they developed over a two year period for the design and fabrication of the LifeMask as well as their involvement with a local hand transplant team.

Goals of the workshop:

- To learn about developing a partnership between the anaplastologist, transplant team, and organ procurement agency
- To participate in a hands-on exercise using the techniques developed by Duncan and Calhoun to create mini LifeMasks. Each participant will leave with a small kit of materials that they can take home and continue to experiment with in order to incorporate the technique into their own workflow.

About the Presenters

Gillian Duncan has a dual career and certifications in medical illustration and clinical anaplastology. For over 30 years, Gillian has used her knowledge of surgery, anatomy and pathology to create medical and scientific images and fit life-like

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prostheses for patients missing part of their face. Her ability to combine art, science, medicine and technology lead her to establish Graphica Medica Institute for Medical Illustrations and Facial Prostheses in Homburg Germany. Gillian opened Graphica Medica, LLC in Rochester, Minnesota in 1991 and sold the anaplastology practice in 2016. Presently, Gillian is a consultant to the Department of Medical Illustration at Augusta University, Augusta, Georgia.

See bio for Michaela Calhoun, MS, CCA on page 10.

Since January of 2016, **Meg Rogers** has served as Director of Transplant Center Relations for LifeSource, a non-for-profit organ and tissue donation organization based in Minneapolis, MN. She has been with LifeSource for 20 years and prior to her current role, she spent 16 years as the Director of Organ Procurement. Ms. Rogers is currently a member on the Organ Procurement and Transplantation Network (OPTN) Membership and Professional Standards Committee and the North American Transplant Coordinators Organization. Meg holds a BSN from Villanova University of Pennsylvania and is certified by the American Board of Transplant Coordinators.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 8:15 am – 8:55 am



KEYNOTE PRESENTATION

Saving Faces

Presenters

Mark Gilbert, Ph.D. and James E. Van Arsdall, Ph.D.

The presentation shall describe Dr. Gilbert's doctoral dissertation, which explored the experience of portraiture in a clinical setting for both artist and a small cohort of head and neck cancer patients. The study discovered that the process and inherent dualities of portraiture apply to both artist/sitter and physician/patient interactions. Gilbert will also describe previous collaborations including his work alongside British, maxillofacial surgeon, Prof. Iain Hutchison and his patients at the Royal London Hospital, England. Gilbert was commissioned to paint Hutchison's patients as they experienced their illness and surgery. The resultant collection of over 100 artworks, entitled *Saving Faces*, was exhibited at the National Portrait Gallery, London, and toured widely across Europe and North America.



About the Presenters

Mark Gilbert Ph.D. is a visual artist and scholar. He is currently Postdoctoral Fellow with the Medical Humanities (HEALS) program at Dalhousie University, Nova Scotia, Canada where he is designing and implementing an integrated humanities curriculum with the Division of Medical Education. Gilbert has a Ph.D. from the University of Nebraska Medical Center, where he was recipient of the Regents Fellowship.

Dr. Van Arsdall worked for the University of Nebraska Medical Center as a continuing education administrator from 1976 to 2000 involved primarily with the

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colleges of Medicine, Pharmacy and Dentistry. Some significant projects were the Nebraska Vietnamese Education, development of early Advanced Trauma Life Support provider and instructor courses and development of Emergency Medicine Review and Family Practice Review courses.

Currently he is a faculty member at Metropolitan Community College in Omaha, Nebraska where he teaches political science, military history, Latin American history and world civilization courses. He also serves as the college online lead faculty. Dr. Van Arsdall received his BS degree in History and Political Science from Western Carolina University and his MA and Ed.D. degree from the University of Nebraska in Comparative/International Education and Adult Education Policy Studies.

In 2001 when Jim was in his late 50's, he had surgery to remove a squamous cell carcinoma from his tongue and associated lymph nodes. For the last 15 years he has continued to visit UNMC clinics for related side effects of his treatment, including radiotherapy. In 2014 just after having surgery to rebuilt his jaw he met Scottish artist Mark Gilbert. In total, he visited Dr. Gilbert's studio 17 times over a 3-month period. Today Jim continues to work with the University of Nebraska Medical Center to promote the therapeutic effects of art in medicine.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 9:00 am – 9:15 am



Living in the Material World: the Anaplastology Experience of Patients with Vision Loss

Presenter

Michaela Calhoun, MS, CCA

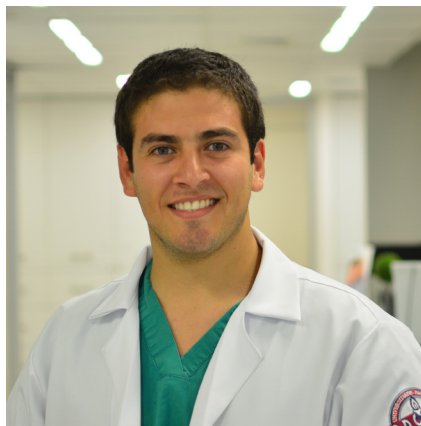
The “material world” can have vastly different meanings to different people. When considering an individual with total vision loss, regular physical interaction with the material world is an essential mode of communication. Since beginning my work with ocular prosthetics in 2014, I have learned a great deal about working with patients with vision loss. Recently, my work with a blind individual who works in the vision loss support field, has inspired me to share this topic. There are many patients with vision loss who require specific considerations for the successful use of a prosthesis. These considerations will be discussed as well as basic principles for working with individuals with vision loss in an anaplastology setting.

About the Presenter

See bio for Michaela Calhoun, MS, CCA on page 10.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 9:20 am – 9:35 am



High Definition 3D Models for Maxillofacial Rehabilitation from a Mobile Device and Free Software

Presenter

Rodrigo Salazar Gamarra, DDS, MSc

Patients who attended the Bucomaxillofacial Prostheses Clinic of the Universidade Paulista for maxillofacial prosthetic treatment, and voluntarily accepted to participate were selected. With the use of a mobile device, pictures were captured of patient's facial anatomy and converted into digital 3D models by methods of photogrammetry. The images were processed by open source software and transformed into a *.stl model for analysis and printing. Generating 3D models

to make digital face impressions is possible by the use of monoscopic photogrammetry with photos taken by a mobile device, 3D modeling from free software. The method of 3D modeling allowed us to optimize the quality of the images, obtaining a realistic reproduction of the skin of the patient in a printable file.

About the Presenter

Dr. Salazar is a Peruvian dentist, Specialist in Oral Rehabilitation, and has a MSc. He is a Ph.D. student at the Paulista University with Luciano Dib. While earning his master's degree, the team developed an accessible method for doing monoscopic photogrammetry using smartphones, free software and low cost 3D printers. The purpose of this alternative method is to provide access of high quality technology to optimize the fabrication process of facial prostheses. He serves as Secretary of the International Anaplastology Association and at the Latin American Society of Maxillofacial Rehabilitation. In addition, he is a Member of the International Society of Maxillofacial Rehabilitation. Dr. Salazar is also a Professor at the Peruvian University of Applied Sciences (UPC) Laureate International Universities and is an international lecturer on maxillofacial prosthetics. He also received an Honor of Merit and special recognition for volunteer social work in Peruvian undeveloped communities, achieving 90 social projects and activities in 25 districts of Peru.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 9:40 am – 9:55 am*The Many Facets of an STL File*

Presenter

Juan R. Garcia, MA, CCA

Stereolithography (STL) files are used to specify digital 3D geometry that can be printed into a physical object. Facets refer to the faces of that geometric object. An STL file thus describes the series of facets making up the 3D object.

But in another sense, there are many facets to the STL file we are more often using as part of a digital workflow. This presentation will focus on the many facets (or aspects) contributing to a 3D STL file. A series of case presentations will highlight the various workflows used to create digital print-ready files and several considerations related to implementing digital workflows in our clinical practice.

About the Presenter

Mr. Garcia is an Associate Professor at the Johns Hopkins University School of Medicine, Department of Art as Applied to Medicine. He is the Director of the Johns Hopkins Facial Prosthetics Clinic. He is also currently serving as the Director of the 3D Printing Lab at the Johns Hopkins Carnegie Center for Surgical Innovation.

Mr. Garcia is a former President of the International Anaplastology Association (2003-4). He is a Board Certified Clinical Anaplastologist (CCA) and serves as the President-Elect of the Board for Certification in Clinical Anaplastology (BCCA). He is the Chair of the BCCA Job Task Analysis Committee tasked with updating criteria used as part of the BCCA certification program. Mr. Garcia earned his Master of Arts (MA) degree in Medical and Biological Illustration from JHU School of Medicine in Baltimore, Maryland and has a Bachelor of Fine Arts (BFA) Degree in Graphic Design and Illustration and Bachelor of Science (BS) degree in Biology from the University of Miami, Florida.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 10:20 am – 10:35 am

*The Science of Clinical Lighting
for Accurate Color Matching*

Presenter

Paul Tanner, CCA

Understanding light and how humans perceive it makes an enormous impact on the outcome of the work of the anaplastologist. Have you colored a prosthesis and felt satisfied with the result – but then you walked outside to see it look completely different? It can be frustrating and very challenging to find a good light source for great coloring matching. Recent changes in the lighting industry are providing anaplastologists new options for color matching.

About the Presenter

As a young artist, **Paul Tanner, CCA** knew early on that he wanted to make facial prosthetics after a relative lost his ear to cancer. He earned his degrees studying art, science, and business at the University of Utah. In 2010, he earned certification in clinical anaplastology from the Board for Certification in Clinical Anaplastology. He helped build the program at Huntsman Cancer Hospital where he works mostly with head/neck surgeons and plastic surgeons to help patients recover from the devastating blow of cancer. He enjoys helping women that had mastectomies for breast cancer treatment feel whole again with areola/nipple prosthetics. He is also known for making ears for children as young as three years old with microtia. Paul loves life! He and his wife JeVonne have five children. They enjoy sports, exploring, building things, digging in the dirt, and just about every adventure sport you can there is. Paul particularly enjoys skiing, rock climbing, fishing, and whitewater kayaking.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 10:40 am – 10:55 am



Total Mandibular Defect Reconstruction with Nobel Zygomatic Implants Supported Lower Face Prosthesis

Presenter: **Artavazd Kharazyan, DDS**

Contributor: **David Nazaryan**

For the patient suffering from total mandibular defect with 2 separate remnants of rami mandibulae was chosen a method of complex implant supported prosthetic reconstruction of lower face portion. Zygomatic implants were placed in the remnants of mandibular canals of separated pieces of the rami mandibulae on both sides. The upper edentulous maxilla was reconstructed by a complete removable denture. Mandibular structures and lower denture were fabricated from a heat curing methyl methacrylate as a joint ensemble with two screw type fixtures on both sides. The acrylic mandible with the artificial denture was connected to the zygomatic implant super-structures on both sides of rami mandibulae remnants with the help of atypic adjustable screw systems, in centric inter-maxillary relationship and short vertical excursion pathway of consolidated mandible. Soft tissue structures deficiency was recovered by E skin Spectromatch silicone system. All structures of oral diaphragma, buccal region and lower lip were reconstructed by the silicone M511 of Technovent. The silicone tissues were attached to the acrylic mandible with 3 magnetic attachments on the frontal and rear sides of mandible. Saliva evacuation system was reconstructed entirely in silicone cover with 2 artificial aquaeducts from both sides, that collect saliva and direct it to the throat immediately. Due to the specific mechanism of articulation all mandibular movements in 3 axis has been rehabilitated totally. Esthetic parameters of the

total implant retained acrylic-silicone lower face prosthesis are quite preferable.

About the Presenters

Artavazd Kharazyan, DDS

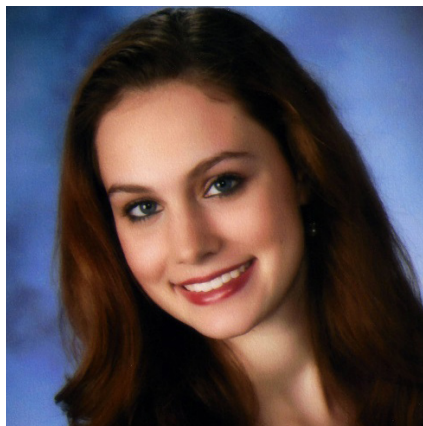
1993 – Educated from Dental School of Yerevan State Medical University
 1995-1998 -Post-graduate of Maxillo-facial prosthodontics
 1998-2001 - Head of Maxillo-Facial Prosthodontic Department, Central Clinical Military Hospital, Armenia
 1993 - 2001 - Lecturer and associate prof. at Yerevan State Medical University M. Heratsi
 2001 - 2014 - Moscow State University of Medicine and Dentistry, Maxillo-Facial Prosthodontic Chair
 2015-Maxillo-facial Prosthodontic Unit, Head, ENT Clinical, Researching Center, Moscow
 2003 till now - Founder and Head of Maxillo-facial and Dental Clinic “Dental Art Systems”. www.dentalarts.ru

David Nazaryan

2008 - Educated from Moscow State Medical University aft. Sechenov
 2008-2013 - Maxillofacial surgeon at Russian Scientific Center for Surgery aft. Ac. Petrovskiy
 2009-2013 - Head of Surgery at clinical network Unident, Moscow
 2013 – Ph.D. dissertation
 2013-founded Implantological Center NK Clinic
 2014 till now - Head of maxillo-surgery Department at ENT Clinical Researching Center, Moscow www.nkclinic.ru

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 11:00 am – 11:40 am



KEYNOTE PRESENTATION

Facing the World: the Psychosocial Effect of Facial Disfigurement

Presenter

Marissa Suchyta

This presentation delves into the most recent research on the social and psychological effects associated with congenital and acquired facial disfigurement. This includes the effect of disfigurement on quality of life, self-esteem, social function, and body image issues, as well as patient-described barriers to pursuing both anaplastology and surgical intervention. The ultimate goal of anaplastology is to improve patient quality of life, which is determined by these social and psychological factors, and thus an understanding of these can aid in better offering options to patients.

About the Presenter

Marissa Suchyta is a research fellow in the Plastic Surgery department at Mayo Clinic with Dr. Samir Mardini, Director of the Mayo Clinic Face Transplant Program. Marissa's research focus is both basic science and clinical studies to improve outcomes following face transplant, including assessing the impact of facial deformity on quality of life, barriers to transplant, and ethical controversies in face transplant. Her basic science research is on improving nerve regeneration outcomes in face transplant as well as novel imaging techniques to improve preoperative planning. Marissa graduated from Harvard University in 2014 with a degree in Human Developmental/Regenerative Biology and will be entering medical school in the fall.

CONFERENCE PROGRAM: GENERAL SESSION

Thursday, 1:00 pm – 3:00 pm*Sponsor Learning Workshop: CAD-CAM
Technology at the Service of Anaplastology*

Presenter

Bernard Robichaud

In this lecture, you will be able to see and learn about real cases done using CAD-CAM technology. This technique gives access to new materials and new shapes of solution that are not available using traditional methods. From a CT SCAN, MRI or physical impression of your patient, Panthera Dental with the use of their software and know-how can design the perfect solutions to treat your patient. This lecture will also cover and explain why CAD-CAM technology reduces the risk of implant supported prosthesis by increasing precision and offering an access to material only available using milling and 3D printing techniques.

About the Presenter

Bernard Robichaud is the co-founder of Panthera Dental, a lecturer, and a Specialist in High Technology CAD/CAM Dental Products. He graduated in Telecommunications at Collège radio télévision de Québec (CRTQ). During his career, he led several lectures in English and French in 10 different countries and trained over 400 dental specialists in the CAD/CAM dental field.

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 9:05 am – 9:45 am



KEYNOTE PRESENTATION

Live Bioprinting of Gelatin-Nanosilicate Scaffolds for Rapid Bone Defect Healing

Presenter

Venu G. Varanasi, Ph.D.

Bone substitution according to current procedures requires 2 separate steps. First assessing bone defect dimensions, and then implanting an autologous bone graft. However the limitations in these procedures include mismatch between the scaffold and the defect and displacement of the scaffold during implantation. Moreover, use of autologous bone grafts increase donor site morbidity, require additional surgery, and cannot structurally support large critical size defects that

require mechanical support and stabilization of the defect site. In this study, we propose a novel gelatin-nanosilicate scaffold for structural support and enhancing the bone healing process as well as a novel in situ printing approach to directly treat the defect site upon diagnosis. Here, we present the results of studies involving the use of these scaffolds and their effect on bone healing rates, cell migration, and degradation. Microstructure and chemical properties of the proposed material will be presented.

About the Presenter

Dr. Varanasi received his Bachelor of Science in Chemical Engineering at the University of South Florida in 1998 (graduated with distinction). After completing his Bachelor degree, he pursued graduate studies in Chemical Engineering at the University of Florida and graduated with his Ph.D. in 2004. His research involved a joint collaboration with the Oak Ridge National Laboratory where he used aerosol-assisted liquid delivery chemical vapor deposition of yttria-stabilized zirconia coatings on Ni-Al substrates in commercial aircraft engine and fuel cell applications. Dr. Varanasi was then accepted into a Postdoctoral Fellowship with the National Institutes of Health where he studied the effects of bioactive glass coatings on cellular behavior in oral health applications. Dr. Varanasi is currently funded by an NIH/NIDCR R03 award to explore antioxidant properties of amorphous silica-based biomaterials for use in rapid bone healing. His current work stemmed from his previous funding from the NIH/NIDCR K25 Career Development Award. Dr. Varanasi is currently an Assistant Professor in the Department of Biomedical Sciences at the Texas A&M University College of Dentistry.

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 10:10 am – 10:25 am



Bioengineering and 3D Printing Hybrid Materials for “Smart Prosthetics” and Bio-Integrated Devices

Presenter

Michael McAlpine, Ph.D.

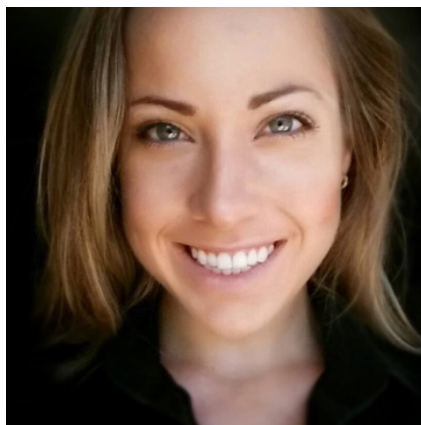
The development of methods for interfacing high performance functional devices with biology could impact regenerative medicine, smart prosthetics, and human-machine interfaces. Indeed, the ability to three-dimensionally interweave biological and functional materials could enable the creation of devices possessing unique geometries, properties, and functionalities. Yet, most high quality functional materials are two dimensional, hard and brittle, and require high crystallization temperatures for maximal performance. These properties render the corresponding devices incompatible with biology, which is three-dimensional, soft, stretchable, and temperature sensitive. We overcome these dichotomies by: 1) using 3D printing and scanning for customized, interwoven, anatomically accurate device architectures; 2) employing nanotechnology as an enabling route for overcoming mechanical discrepancies while retaining high performance; and 3) 3D printing a range of soft and nanoscale materials to enable the integration of a diverse palette of high quality functional nanomaterials with biology. 3D printing is a multi-scale platform, allowing for the incorporation of functional nanoscale inks, the printing of microscale features, and ultimately the creation of macroscale devices. This three-dimensional blending of functional materials and ‘living’ platforms may enable next-generation 3D printed devices.

About the Presenter

Michael C. McAlpine is the Benjamin Mayhugh Associate Professor of Mechanical Engineering at the University of Minnesota. Previously, he was an Assistant Professor of Mechanical and Aerospace Engineering at Princeton University (2008-2015). He received a B.S. in Chemistry with honors from Brown University (2000) and a Ph.D. in Chemistry from Harvard University (2006). His research is focused on 3D printing functional materials & devices, including the three-dimensional interweaving of biological and electronic materials using 3D printing. He has received a number of awards, including the Presidential Early Career Award for Scientists and Engineers (PECASE), NIH Director’s New Innovator Award, a TR35 Young Innovator Award, an Air Force Young Investigator Award, the Intelligence Community Young Investigator Award, a DuPont Young Investigator Award, a National Academy of Sciences Frontiers Fellow, a DARPA Young Faculty Award, an American Asthma Foundation Early Excellence Award, a Graduate Student Mentoring Award, the Extreme Mechanics Letters Young Lecturer, and an invitation to the National Academy of Engineering Frontiers in Engineering.

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 10:55 am – 11:10 am



Evaluation of a Digital Workflow: Treatment Planning, Simulation, and 3D Printing

Presenters

Amanda Behr, MA, CMI, CCA, FAMI & Shawn McLeod

As the technology for 3D printing and scanning rapidly changes, it becomes important to periodically evaluate your treatment workflows for efficiency. Recently, we incorporated simulations of final results into our treatments process for complex cases to provide a level of reassurance for patients prior to procedures. When faced with the important decision to move forward with prosthetic treatment, patients and their families consider a number of options. In weighing the cost benefit of surgical intervention and osseointegration, simulations of the final result provide reassurance. When DICOM data is available, 3D simulations can be generated inexpensively. We combine ZBrush, a DICOM viewer, and 3D CAD software to present simulations of the final result to patients and surgeons remotely or in person. These low cost tools provide peace of mind for patients and facilitate discussion with surgeons. When 3D printing and scanning initially entered the Anaplastology field over ten years ago the cost was prohibitive and most of the production of the scan and prints were handled by outside companies. The use of DICOM data to create accurate 3D models of patient anatomy and the introduction of consumer grade 3D printers in a variety of resolutions has opened up the potential for digital workflows. Our past workflow with 3D printing relied on a duplication of the print to make a wax model. We discuss an evolution of the workflow and evaluate the positives and negatives. We compare time and cost of workflows of the following: directly using low resolution 3D prints in the sculpture process, printing a low resolution flexible mold for the wax model,

digital sculpture and a high resolution print as a model for sculpting, and lastly, a digital sculpting workflow and direct digital production.

About the Presenters

Amanda Behr received her master's degree from the Johns Hopkins University School of Medicine program in Biological and Medical Illustration. She completed internships in anaplastology with Juan Garcia at the Johns Hopkins Facial Prosthetics Clinic and with Gillian Duncan for Prosthetics at Graphica Medica. She is a certified medical illustrator and a certified clinical anaplastologist. In January of 2013, Amanda joined the Faculty of the Department of Medical Illustration at Augusta University as Assistant Professor. She became Clinical Director and Anaplastologist for Augusta University's Clinic for Prosthetic Restoration in 2014, serving patients in need of facial and somatic prosthetics. In 2015, she was named interim chair and program director of Augusta University's Department of Medical Illustration. She has served the board of the International Anaplastology Association as Secretary and President. Amanda has been a board member of the Vesalius Trust since 2009, and is currently and advisor to the board. Amanda's research interests include the affordable integration of 3D printing and 3D scanning technologies in medicine. She is particularly interested in the use of DICOM data and 3D printing to create custom surgical implants and custom medical models for surgical planning and education.

Shawn McLeod began her formal education at the University of California, Santa Barbara. Here she accomplished a double

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major, obtaining a BS in molecular, cellular, and developmental biology, in addition to acquiring a BA in studio art. Interested in the medical world, Shawn worked as an assistant in a Maxillofacial surgery practice, allowing her to observe surgical procedures and interact with patients. In pursuit of a career in Medical Illustration, Shawn switched coasts, moving to Georgia to begin her training at Augusta University. Upon completion of her thesis project investigating the use and design of 3D models for patient education, she was awarded her Masters of Science in Medical Illustration. Currently, Shawn continues her research and training in Anaplastology and applications of 3D media. Shawn is an active member of both the Association of Medical Illustrators and the International Anaplastology Association. Outside of her professional career, Shawn enjoys plein air painting, hiking, and cooking fresh, local cuisine.

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 11:15 am – 11:30 am



The Antibacterial Properties of Silicone Lining Materials, Incorporated with Quaternary-Ammonium Polyethyleneimine (PEI) Nanoparticles – Can It Improve Our Silicone Prostheses?

Presenters

Anat Sharon, DMD, MSc, MHA & Nurit Beyth, DMD, Ph.D.

Polycationic nanoparticles show biocompatible, broad-spectrum bactericidal properties in vitro and in vivo when incorporated in silicone lining material post-maxillectomy in head and neck cancer patients. In the present study, the

synthesized Crosslinked quaternary ammonium polyethyleneimine nanoparticles were found to have a strong bactericidal activity against a wide variety of microorganisms rapidly killing bacterial cells when incorporated at small concentrations into silicone lining materials without compromising mechanical and biocompatibility properties. This appears advantageous over conventional released antimicrobials with regard to in vivo efficacy and safety, and may provide a convenient platform for the development of non-released antimicrobials. This is a crucial issue when it comes to giving an answer to the serious and life-threatening problems of contaminations in immunocompromised patients such as orofacial cancer patient. Can this work also with our materials? Silicones for face prostheses? Can we combine science with practice?

About the Presenters

Dr. Anat Buller Sharon holds D.M.D. and MSc degrees from the Hebrew University Hadassah School of Dental Medicine in Jerusalem, where she also completed an internship in prosthodontics, and in Maxillofacial Prosthetics. She is a certified prosthodontist and maxillofacial prosthodontist, and was senior lecturer at the Hadassah School of Dental Medicine. She is a member of the Israel Society of Prosthodontics, the Israel Society of Head and Neck Surgery and Oncology, the international association of anaplastology, and the European Society of Dental Laser Applications. She has published articles in peer reviewed journals and chapter in book, in the fields of maxillofacial prosthetics and laser dentistry. Dr. Buller Sharon conducts a special course of “art in medicine”, especially designed for plastic surgeons, in Israel. Dr Anat Buller-Sharon combines latest technologies of prosthetics in her daily practice with face prostheses, for her patients that usually present

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severe malformations. Dr. Buller-Sharon was involved in research that started in 2009, studied the Antibacterial properties of silicone soft liner materials incorporated with quaternary ammonium polyethylenimine nanoparticles. The aim of the research was to find a way, of decreasing infection risk, post maxillectomy and mandibulectomy. The results of this research were published in "Biomaterials" in 2015.

Prof. Nurit Beyth holds D.M.D. and PhD degrees from the Hebrew University Hadassah School of Dental Medicine in Jerusalem. She completed an internship in prosthodontics. In addition, she received post-doctoral training in Case Western Reserve University, Cleveland, USA. She has published numerous articles in peer reviewed journals and chapters in books in the fields of biomaterials, microbiology and dentistry. She is a member of the International Association for Dental Research, and the Israeli Society of Oral Rehabilitation. Dr. Beyth directs the fifth year graduate clinical program in prosthodontics, conducts clinic teaching, and lectures at the pre- and post-graduate levels at the Hebrew University Hadassah School of Dental Medicine in Jerusalem. Her research focuses on antimicrobial materials and microbiology at the basic, translational, and clinical levels, while maintaining an active clinical prosthodontic practice. Major research interest: non-antibiotic therapies against bacteria including antimicrobial peptides, antibacterial polymers, phage therapy, and anti-biofilm nanoparticles; biomaterials, novel dental technologies, antibacterial properties of dental materials, advanced dental materials; oral microbiology, bacterial adhesion, biofilm; multi-cellular behaviors of bacteria including cell-to-cell communication, differentiation, programmed cell death and biofilms; and, bacterial persistence and antibiotic tolerance mechanisms.

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 11:35 am – 11:50 am



The Use of 3D Technology to Scan a Facial Defect, Design the Prosthesis and Print the Final Investment Casts

Presenters

Denise VeyVoda, MA, DDS, FAAMP & Tyler York BS, BA

The design of facial prosthetics have historically been made with the recording of measurements and markings on the patients face, to establish size, location, and dimension of the prosthesis. Impressions were made of the intaglio surface and a sculpture created with the use of Clay or a mixture of waxes. This was a very time intensive method and left the final prosthetic result dependent on the artistic talent, ability to mix color and understanding of The Golden Ratio to the

individual Anaplastologist or Doctor. Not a very predictable result was always achieved. What if a more accurate, non invasive method of capturing these measurements, exact surface detail and relationship to the other facial and cranial structures were to be developed? Could the sculpture be achieved in a digital format? Could surface texture, captured from the patients skin textures and stamped onto this digital sculpture, be achieved and then a counter made, capturing all of this detail and accurate fit? Could this be repeated multiple times without distortion or wear to the casts and could more prints of the casts be made that would mesh completely for many years? Could the workflow be reduced by half? The protocol that I have developed, with the technological support of Tyler York and 3DSystems, achieves all of the above with predictable results. The development and execution of this protocol has reduced the time from meeting the patient to delivery of a facial prosthesis in half. The artistic role of the Anaplastologists/Maxillofacial Prosthodontist has been preserved and married to the technology of today; increasing the accuracy, design, realistic texture, fit, and preservation of data.

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About the Presenters

Dr. VeyVoda has been in private practice in Oyster Bay, NY along with her husband, Robert West, since 1986. Dr. VeyVoda is also a part time Attending at Long Island Jewish Medical Center in the department of Otolaryngology and Dental Medicine. She is a member of the Head and Neck Tumor Board at this institution and is a consultant at various other Long Island Hospitals. Dr. VeyVoda's practice provides custom intra oral and facial prosthetics for patients who have acquired, traumatic and congenital defects. Dr. VeyVoda has a great interest in technology and how it can be applied to facial prosthetics using technologies available to the dental community and melding this with Maxillofacial Prosthetics. Dr. VeyVoda has been a member of The International Anaplastology Association since 1993 and is also a Fellow of The American Academy of Maxillofacial Prosthodontics.

Mr. York is a Biomedical Designer for 3D Systems. Mr. York has a B.S. in Industrial Design as well as a B.A. in Spanish Language and Culture

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 11:55 am – 12:10 pm



Nasal Prosthetic Anatomic Retention: A Safe and Practical Approach

Presenter

Eric S. Asher, MAMS

Contributors

Merissa Ferrar, BA, Candice Zemnick, DMD, John H. Evans, DDS

Described is the fabrication of an anatomically retained nasal prosthesis. It is a two-part prosthesis consisting of a highly polished heat polymerized polymethyl methacrylate (PMMA) substructure and a silicone superstructure. PMMA retains a high polish, is adjustable and is hygienic making it suitable for intranasal use.

Silicone is flexible and durable allowing for thin esthetic margins. Combining

PMMA and silicone utilizes the benefits of both materials. This treatment provides the patient with predictability of prosthetic placement and dependability of retention which is a key component to prosthetic success. This treatment provides secure retention without the need for craniofacial implant placement. An intranasal impression is required to capture useful undercuts in the anatomy of the defect. The resulting cast is used to construct a PMMA substructure for anatomical retention. The PMMA substructure is hollowed for an air passage and then tried on the patient for a pickup impression. A soft-tissue analogue cast is made as the working cast for sculpting the wax pattern. Multilayered intrinsic coloration is used for the silicone superstructure. Mold making, casting, post-treatment care instructions and prosthetic hygiene are described.

About the Presenter

Eric Asher MAMS works as a Maxillofacial Prosthetist for the James J. Peters VA Medical Center, Dental Department, Bronx, NY and Columbia University College of Dental Medicine, New York, NY. He has over 20 years professional experience practicing as an anaplastologist. He is a former president of the AAA (now IAA). Mr. Asher has authored and coauthored many articles for professional publications focusing on improving techniques and treatments for patients in need of maxillofacial prostheses. Today's topic is a reflection of his experience and compassion for patients in need.

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 2:00 pm – 2:15 pm



Human Deciduous Teeth Associated with a Nanometric Calcium Phosphate Coating to Improve Bone Tissue Regeneration

Presenter

Roberto Fanganiello, B.Sc, PhD

Almost all craniofacial structures, such as bone, cranial and facial sutures, cartilage, ligaments and teeth, are derived from mesenchymal cells of neural crest origin and adult mesenchymal stem cells (MSCs) have been isolated from most of the post-natal tissues, including several craniofacial tissues. MSCs have a well characterized potential to differentiate toward all cellular lineages that constitute adult mesenchymal and connective tissues. Particularly, dental pulp tissue is an interesting source of MSCs to be used in tissue bioengineering studies due to their multidifferentiation potential, noninvasive and efficient process of isolation, immunosuppressive activity and similarity to bone cells.

The combination of stem cells with biomaterials for cell-based therapies, where cells and materials are previously associated, is a promising strategy to deliver cells to guide the process of tissue regeneration, optimizing parameters such as osteoconduction, osteoinduction and osteogenesis. Calcium phosphates are a family of osteoconductive and bioactive materials with enhanced bone binding properties. Biomaterials aiming to substitute bone are usually designed with calcium phosphate compounds due to its similarity to the bone mineral phase, their capability to modulate the in vivo resorption by changing the calcium to phosphate ratio, and by the possibility to produce a porous microstructural design. Hence, a novel approach to optimize mesenchymal stem cells association with the bioinert surface of intraosseous implants is to use a nanometric calcium phosphate coating, which play an important role in the adhesion and attachment of mesenchymal cells to its surface, as well as in their viability.

In this talk, I will present data pertaining the development of a calcium phosphate coating over titanium implant surfaces as well as its association with stem cells from human exfoliated deciduous teeth.

About the Presenter

Roberto Fanganiello, B.Sc, PhD: Bachelor's Degree in Biology from the Institute of Biosciences of the University of São Paulo (IB-USP); Ph.D. in Human Molecular Genetics from IB-USP and Yale University Medical School (Department of Orthopaedics and Rehabilitation); Post-doc fellowship at the Human Genetics and Stem Cells at the Human Genome and Stem Cell Research Center (HUG-CELL) of USP. Member of the following international societies: International Society for Stem Cell Research (active member), International Society for Cellular Therapy (member of the commercialization committee), International Anaplastology Association (member of the board of directors), American Society of Human Genetics (active member), Society for Biomaterials Research <http://migre.me/wdCfo>

CONFERENCE PROGRAM: GENERAL SESSION

Friday, 2:40 pm – 3:10 pm



Panel Presentation – The Future of Anaplastology around the World

Moderated by Suzanne Verma, MAMS, CCA

Panelists:

Gaston Bernier, DMD, FADQ

Julie Jordan Brown, MAMS, CCA

Omar Gutiérrez, MD – ENT

Kuldeep Raizada, PhD, BCO, BADO, FAAO

Venu G. Varanasi, Ph.D.

What is the future of Anaplastology? In order to forge a path to an enhanced future we must begin with a collective understanding of what we are currently faced with around the world. This panel is meant to start the conversation and discuss our challenges, our advantages and our limitations due to technology, global or local access to materials, health care processes, and social economic factors. Our discussion hopes to give an opportunity to highlight several of the many issues that our field faces currently and how these factor into the future of the field of Anaplastology.

About the Presenter

Ms. Suzanne Verma is Assistant Professor with the Oral & Maxillofacial Surgery Department and Certified Clinical Anaplastologist with the Center for Maxillofacial Prosthodontics at Texas A&M University College of Dentistry in Dallas, Texas. Her teaching responsibilities include directing a course in maxillofacial prosthetics for the graduate Prosthodontics department, and lecturing to post doctorate oral surgery residents and dental students. Suzanne received her Bachelors' in Biological Pre-Medical Illustration from Iowa State University, and a Masters in Biomedical Visualization, with an emphasis in Facial Prosthetics from the University of Illinois at Chicago (UIC). Her clinical training experiences include UIC's Craniofacial Center, The Maxillofacial Prosthetics and Dental Oncology Department at the University of Nebraska Medical Center, and The Maxillofacial Unit Laboratory of Morriston Hospital in Swansea, Wales, UK, where she worked as a visiting Anaplastologist. Before arriving in Dallas, Suzanne worked as an Anaplastologist in both research and clinical capacities with COMPRU, (now IRSM) in Edmonton, Alberta Canada. Her research interests on which she has lectured nationally and internationally include; Applications of navigational surgery in extra oral implant placement and Pre-surgical planning in autologous auricular reconstruction. Ms. Verma was recently inducted into the dental honorary society, Omicron Kappa Upsilon by her peers in Dentistry. Suzanne is an active member of numerous field oriented associations, past Vice President of the Board for Certification in Clinical Anaplastology, current Director on the Board for the World Coalition of Anaplastology, and serves as President for the International Anaplastology Association.

CONFERENCE PROGRAM: POSTER PRESENTATIONS

All-Silicone Eyes and Photographs

Presented by Robert A. Erb, BS, MS, PhD

This is a new technique for making silicone eyes for orbital prostheses and other applications. Previously I had presented (IAA Cleveland 2004 and Journal of Ophthalmic Prosthetics, Fall 2012) a technique involving photographic digital imaging of a donor iris and sclera, Photoshop adjustment of the image, ink-jet printing of the image on paper, and embedding the printed photo in an eye structure. The new approach encapsulates an image completely in silicone; there is no paper in the final product. The first step is to apply two coats of a 10% aqueous solution of poly(vinyl alcohol) to waterproof synthetic paper. The digital image (e.g., of a patient's unaffected eye) is sized, color-corrected, and horizontally flipped in Photoshop. The image is printed on the PVAL surface using pigment-based ink-jet ink. A white-pigmented addition-cure silicone is brushed onto the printed surface. The cured specimen is immersed in water, the PVAL dissolves, and the image remains on the silicone rubber. The printed image is then sealed with a clear silicone coating. Using a polyurethane eyeball mold and core, the iris is positioned on the core, the sclera is curved, and the cornea is cast in water-clear silicone (e.g., Shin-Etsu SES-406). The process of printing on PVAL-coated synthetic paper can also be used to make silicone rubber photographs. These are not only flexible, but are also completely waterproof and environmentally stable. Furthermore this process can also be used with curable epoxies and polyurethanes. And finally, this digital imaging and transfer process could be used to make acrylic iris buttons.

About the Presenter

For 39 years, **Robert A. Erb, Ph.D.** has been involved with design, materials, and fabrication techniques for silicone prostheses. Since 1993 Dr. Erb has been an independent scientific consultant and serves as Technical Director of SiliClone Studio in Valley Forge. Prior to 1993 he conducted research and development at Franklin Research Center. From 2007 to 2015 he taught in annual courses at Silicone Prosthetic Institute. He now offers customized training courses—"Applied Silicone Knowledge" (ASK). Bob has been active in the International Anaplastology Association since 1987, and was President in 1996-1997. The IAA gave him the Research Award in 2011 and—with his wife, Doretta—the Walter G. Spohn Award in 2013.

Earring Retention: An Innovative Approach

Presented by Allison Vest, MS, CCA

Limited space in designing a partial auricular prosthesis necessitated creative thinking for earring options. A magnet is embedded into the prosthesis' lobe so the keloiding patient can continue to wear earrings as desired.

About the Presenter

Allison Vest received her Bachelor's degree from New College in Sarasota, Florida in 2002. Her Master's degree was earned in 2004 from the University of Illinois Chicago Graduate School of Biomedical Visualization. Her post graduate facial prosthetic training includes an internship in the Maxillofacial Prosthetics Clinic at the University of Florida Medical Center and an externship at the Morriston Hospital in Swansea, Wales. Ms. Vest serves as owner and anaplastologist at Medical Art Prosthetics southern office located in Texas. Additionally, Ms. Vest serves on the BCCA board as President.

The Effectiveness and Design of Interactive Models for Patient Education Facilitated by 3D printing and Digital Workflow

**Presented by Shawn McLeod &
Amanda Behr, MA, CMI, CCA, FAMI**

Effective patient education results in a more positive patient experience and improved understanding of treatment options or procedures. Recent studies demonstrate the beneficial impacts of 3D printed patient educational models. Proven successful in a wide range of medical fields including oncology, pediatric cardiology, and gastroenterology, 3D printed models offer patients and their families a more relatable experience thereby improving understanding and patient comfort regarding treatment. Successful prosthetic treatment requires that patient and their families understand treatment options and associated implications. One of the more challenging concepts to communicate with prosthetics patients are the options for prosthetic retention. In an effort to improve the way retention methods are discussed and presented to patients, we explored the

applications of 3D printing and digital sculpting to create a suite of comparative interactive patient education models. In developing the set of models considerations to cost, reproducibility, and intended purpose were made. By using a mix of both traditional and digital sculpting techniques and 3D printing, the process of developing the models was streamlined allowing for easy modification to the models and decreased production time and cost. Designed to give patients and family members hands on experience, the models provide a more realistic understanding of their daily routine after treatment. Additionally, by enabling tactile experience with each method of retention, the models allow the anaplastologist the opportunity to gauge the patient's ability and comfort with each method of retention. Applied to patient education, 3D printing offers improved treatment planning and patient engagement resulting in a more comfortable patient experience. Further research into its direct application to Anaplastology promises improved treatment processes and a more streamlined approach.

About the Presenters

Amanda Behr received her master's degree from the Johns Hopkins University School of Medicine program in Biological and Medical Illustration. She completed internships in anaplastology with Juan Garcia at the Johns Hopkins Facial Prosthetics Clinic and with Gillian Duncan for Prosthetics at Graphica Medica. She is a certified medical illustrator and a certified clinical anaplastologist. In January of 2013, Amanda joined the Faculty of the Department of Medical Illustration at Augusta University as Assistant Professor. She became Clinical Director and Anaplastologist for Augusta University's Clinic for Prosthetic Restoration in 2014, serving patients in need of facial and somatic prosthetics. In 2015, she was named interim chair and program director of Augusta University's Department of Medical Illustration. She has served the board of the International Anaplastology Association as Secretary and President. Amanda has been a board member of the Vesalius Trust since 2009, and is currently and advisor to the board. Amanda's research interests include the affordable integration of 3D printing and 3D scanning technologies in medicine. She is particularly interested in the use of DICOM data and 3D printing to create custom surgical implants and custom medical models for surgical planning and education.

Shawn McLeod began her formal education at the University of California, Santa Barbara. Here she accomplished a double major, obtaining a BS in molecular, cellular, and developmental biology, in addition to acquiring a BA in studio art. Interested in the medical world, Shawn worked as an assistant in a Maxillofacial surgery practice, allowing her to observe surgical procedures and interact with patients. In pursuit of a career in Medical Illustration, Shawn switched coasts, moving to Georgia to begin her training at Augusta University. Upon completion of her thesis project investigat-

ing the use and design of 3D models for patient education, she was awarded her Masters of Science in Medical Illustration. Currently, Shawn continues her research and training in Anaplastology and applications of 3D media. Shawn is an active member of both the Association of Medical Illustrators and the International Anaplastology Association. Outside of her professional career, Shawn enjoys plein air painting, hiking, and cooking fresh, local cuisine.

Hybrid Ocular Prosthetics

Presented by Alejandro Echeverry & Margarita Caicedo

Patients that suffered anatomical alterations in bone structure surrounding the orbital, in some cases, cannot get a fully recovery with quirsurgical interventions. Hostile anoftalmic cavities can have problems holding a regular ocular prosthetic. Patients with this description where selected and brought into treatment for the fitting and adaptation of a hybrid ocular prosthetic that recreate the eye and portion of its surrounding tissue that is missing. Different situations such as car accidents, traumas, retinoblastoma or melanomas are responsible for hostile anoftalmic cavities. After the processes of fitting and adaptation a part ocular, part ocular tissue prosthetic was developed. The individual work in each case resulted in a perfect anatomical fit that was closely designed and manufactured. The last result shows a unique fitted ocular-tissue prosthetic that can finally conclude the facial rehabilitation process of this patients, not just physically but emotionally as it drives undesired attention away giving a more private and comfortable overall recovery.

About the Presenters

Margarita Caicedo is an optometrist and ocularist from La Salle University in Bogota, Colombia. Margarita started in ocular prosthetics design and manufacturing in the 1990s. In the mid 2000s, she started developing prototypes in anaplastology as a complement to her ocular prosthetics and became an Anaplastologist from Indiana University. While ears, noses and orbital prosthetics were the first to appear during the early anaplastology stages, she now develops full facial prosthetics, breasts, hands, feet, fingers and tissue pigmentation treatments in Colombia where she gets national and international recognition for her high quality work.

Alejandro Echeverry is an Industrial Designer from Icesi University. He started as a design and process manager on a multidisciplinary team in a medical lab located in Cali, Colombia. This medical lab is dedicated to the fitting and adaptation of ocular and facial prosthetics. It has become the perfect workplace for research prosthetics design concepts leading to new developments such as breasts, hands, feet, fingers prosthetics.

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