

**Christine D. Young, M.A.**

Fellow, The Association of Medical Illustrators  
Certified Medical Illustrator 1992 through December 31, 2018  
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**Clinical Assistant Professor**  
**Graduate Program in Biomedical Visualization**  
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**professional experience**

**Young, McKenna & Associates, Inc.**

Art for Science Health and Medicine  
Evanston, Illinois

1992 - present  
Partner | Creative

Science visualization strategy, literature research, content development, script writing, storyboards, preparation for medical regulatory legal review, illustration and media design for medical education, biopharmaceutical promotion, and medical advertising agency pitch and agency of record clients; identification and partnering with thought leaders and medical investigators; focus on molecular biology, 3D visualization of proteins and protein movement, biochemistry, pharmacology, immunology and diseases of the immune system, cardiovascular disease, metabolism and diabetes, oncology, microbiology and neuroscience. Clients include research scientists, biopharmaceutical companies, Dentsply, agencies such as Havas Life, HPS, Catapult and H4B Chelsea, Phase Five, and XVIVO Scientific Animation in Hartford, CT.

**Graduate Program in Biomedical Visualization**

University of Illinois at Chicago  
Chicago, Illinois

2012 - present  
Clinical Assistant Professor

1998 - 2008  
Adjunct Clinical Assistant Professor

**Graduate teaching responsibility:**

**Current:**

BVIS 505 Visual Learning and Visual Thinking I - 2 credit hours

BVIS 545 Animation I - 2 credit hours

BVIS 535 Visual Learning and Visual Thinking II - 2 credit hours

BVIS 538 Medical Legal Visualization - 2 credit hours

BVIS 575: Business Practices - 3 credit hours

BVIS 596: Independent Study

BVIS 597: Project Research

Lectures in Molecular Visualization and Storyboard development

BVIS 530: Medical and Surgical Illustration - 4 credit hours - 1998 - 2008  
Emphasis on research, organization, story boarding and medical content development are balanced with application of drawing and visual technology in still, interactive and

**Hurd Studios**

New York, New York  
www.hurdstudios.com  
2007 - 2011 Consultant  
2006 - 2007  
Creative Director (full-time)  
1999 - 2004 Consultant (50%)

Member of medical animation team responsible for scientific information and message strategy development; proposal development; identification and partnering with thought leaders and medical investigators; animation content strategy, script, and storyboard creation; organizational charting of content for matching to media: animation, video or interactive; project management and client interface; research, strategy and presentation of scientific content for agency & medical education pitches to national and international pharmaceutical managers; creation of presentations to clients with scientific visualization development; preparation for medical regulatory legal review; attendance at core team evaluations.

**Anatomical Chart Company**

Skokie, Illinois  
1990 - 1992  
Creative Director

Established in-house medical art department; hired and managed medical illustrator team and assignments to independent contractors; pre-press and print production for 4 color T-shirts and custom medical charts; research, content, design, and illustration of charts for pharmaceutical promotion including development of the 'Understanding' disease series; developed educational retail products such as 'Brain hat'.

1979 - 1992  
Medical Illustrator

Clients included research medical scientists, physicians, medical publishers, medical malpractice attorneys, National Geographic, US News and World Report, and medical associations.

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**publications**

Sojka AC, Brennan KM, Maizels ET, Young CD. The Science Behind G Protein-Coupled Receptors (GPCRs) and Their Accurate Visual Representation in Scientific Research. *Journal of Biocommunications*. 2016. (In Press).

Young C. Illuminating the Science of Life. In: Canalis R, Ciavolella M, ed. *The Illustrated Body: Printing, Anatomy, and Art in the Renaissance*. Turnhout, Belgium: Brepols Publishers. In preparation. 2016.

Maizels M, Mickelson J, Yerkes E, Maizels E, Stork R, Young C, Corcoran J, Holl J, Kaplan WE. Computer-enhanced visual learning method: a paradigm to teach and document surgical skills. *Journal of Graduate Medical Education*. 2009;1:109-113.

Heller & Fernandes. *The Business of Illustration*. Watson-Guption Publications, New York, (page 61) 1995.

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**visual science, animation content development, script & storyboards, and pitch for Havas New York, Princeton, Chicago**

SER-287. Seres Therapeutics. *What Does it Take to Eradicate Recurrent Clostridium difficile?* The Role of the Microbiome. Storyboard and visual science presentation. 2016.

Sarilumab. Sanofi and Regeneron Pharmaceuticals, Inc. *IL-6 & Articular Manifestations of Rheumatoid Arthritis*. 2015. *The Role of IL-6 Dual Signaling*. 2015. *IL-6 and Systemic Manifestations of Rheumatoid Arthritis*. 2016. Science visualization, script and storyboard development for 3 pre-launch animations and MOA.

EYLEA™ (aflibercept intravitreal injection). Bayer HealthCare Pharmaceuticals and Regeneron Pharmaceuticals, Inc. *Exploring New Insights in the Treatment of Diabetic Macular Edema*. Global and US Launch. 2014. *Exploring New Insights into Wet AMD - EYLEA: A Novel Molecule for Treatment*. US and Global Launch. 2012. *Exploring New Insights into Wet Age-related Macular Degeneration*. 2010. Visualization for US and Global marketing teams 2007 - 2015.

GAZYVA (obinutuzumab). Genentech and Roche. *GAZYVA : The first glycoengineered, type II anti-CD20 monoclonal antibody*. Character development, research, script, annotation and storyboard. 2013.

MEDI-545. MedImmune, LLC. *The Role of Interferon in Systemic Lupus Erythematosus*. 3 minute animation development, content, script and storyboard with animated powerpoint deck. 2009 - 2010.

Apligraf®. Organogenesis Inc. *Apligraf: Orchestration of Wound Healing through Keratinocyte - Fibroblast Interaction*. Visual science foundation. 2 minute animation development, content, script and storyboard. 2010.

Takeda Pharmaceuticals North America, Inc. and H. Lundbeck A/S. *Multi-functional Neuromodulation for Mood and Anxiety Disorders*. Lu AA21004 - Pitch, Science Branding during initial Phase III clinical testing, and training of Medical Science Liaisons on animation content and related science research. 2008 - 2010.

Parkinson's Disease. BiogenIdec. *Adenosine A<sub>2A</sub> Receptor Modulation of Basal Ganglia Neurotransmission in Parkinson's Disease*. Animated powerpoint presentation. 2009.

Ketopoxido Proteasome Inhibitors (KePIs). Proteolix, Inc. *Sustained Proteasome Inhibition in Multiple Myeloma*. Visual science foundation, protein structure development and storyboard. 2009.

Pfizer, Inc. and Protalix. *Taliglucerase for Gaucher Disease - ProCellEx plant-based production*. AOR Pitch team. 2011.

Daiichi-Sankyo. Science Visualization story for *Edoxaban Anticoagulation Therapy - FactorXa Inhibition*. Pitch team 2010.

Pfizer, Inc. and Medication, Inc. *mPTP - A New Window to Alzheimer's Disease Understanding*. Dimebon™ (latrepirdine). 2009.

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**animation content development, script and/or storyboards for XVIVO Scientific Animation. Wethersfield, CT**

Helsinn Pharmaceutical. *Cancer Cachexia-Anorexia: Advances in Disease Understanding*. Script and storyboard. 2013.

Otsuka Pharmaceutical, Inc. *Autosomal Dominant Polycystic Kidney Disease. Mechanism of Disease*. 2012.

Organogenesis. *GINTUIT™ Generating Keratinized Tissue with a Living Cell Sheet*. 2012.

Otsuka Pharmaceutical, Inc. *BreathTek: Gastric Cancer Pathogenesis*. 2012.

Cord Blood Registry. *Cord Blood Stem Cells and Autism*. 2012.

Biogen Idec Hemophilia. *Fc Fusion: The Forward-Thinking Long Lasting Technology*. 2011.

Telaprevir®. Vertex. *Mechanism of Action in Hepatitis C*. 2011.

INCB18424. Incyte. *Jak Pathway Signaling in Myeloproliferative Neoplasms*. Script and visual development. 2010 & 2011.

QuantumCES. CaridianBCT. *The Quantum Cell Expansion System: a novel, closed bioreactor for stem cell culture*. Visual science foundation, script development and storyboard 2 minute animation. 2010.

Iniparib®. BSI-201. BiPar Sciences and Sanofi Aventis. *Investigating PARP1 Inhibition with Iniparib: Targeting DNA Repair Mechanism in Cancer*. Visual science foundation, script development and storyboard 4 minute animation. 2010.

Factive®. Oscient Pharmaceuticals. *Gemifloxacin's Dual Hijacking of Bacterial DNA Enzyme Systems*. 2010.

Flibanserin. Boehringer Ingelheim. *Flibanserin Mechanism of Action in the Female Sexual Response in Hypoactive Sexual Desire Disorder*. Storyboard development. 2010.

Celldex therapeutics. *Designing the Next Generation of Antibody Therapy*. Visual science foundation, script development and storyboard 4 minute animation. 2009.

Gleevec® ((imatinib mesylate). Novartis. *Management of Chronic Myelogenous Leukemia or CML*. Visual science foundation, protein structure development and storyboard. 2009.

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**animation content development, script and storyboards for Hurd Studios. New York, New York**

Pro-Argin™ Technology. Colgate. *A Breakthrough Technology for Superior Caries Protection*. Visual science and storyboard development. 2010.

Menveo™ and Bexsero™ vaccines Novartis Vaccines & Chiron. *Menveo: Vaccine Prevention Against Meningococcal ACWY Disease. 2011. Meningococcal Disease: Bacterial Biology Influencing Vaccine Solutions*. Visual science and storyboard development. 2008.

Suvorexant™ (MK-4305) Merck & Co. Image concept development. Orexin receptor antagonist in development for insomnia. 2010.

Eritoran™. Eisai Co., LTD. *Toll-like Receptor 4 in the Pathogenesis of Severe Sepsis*. 2009.

Welchol® (cholesevelam HCl) Bile Acid Sequestrant Daiichi Sankyo *Bile Acids: From Cholesterol Homeostasis to Signaling Molecules in Metabolic Regulation*; 5 minute animation and slide kit detailing nuclear receptor regulation. 2007.

Novartis Oncology Pipeline exhibit and accompanying educational brochure development 2007.

*Immunology IV* for Joseph A. Bellanti, MD; content and storyboard development; 13 minutes of immunology animation for textbook media.

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**animation content development, script and storyboards for Hurd Studios. New York, New York - continued**

- Galvus<sup>®</sup> (vildagliptin) DPP4 Inhibitor Novartis *Incretin Science: a new understanding of type 2 diabetes*. 2006.
- Acomplia<sup>®</sup> (rimonabant) Endocannabinoid receptor antagonist Sanofi-Aventis *Endocannabinoid System in dyslipidemia and glucose homeostasis*. 2006.
- Crestor<sup>®</sup> (rosuvastatin calcium) Statin AstraZeneca. *Statins: Therapeutic Benefits in Vascular Disease* 2002  
International Health & Medical Media Awards Freddie Winner 2002  
*Inflammation: A Unifying Theory for Atherogenesis and Moving Beyond Cholesterol* 2004  
*Reducing the Atherogenic burden: Physiology of Lipoprotein Metabolism* Telly Award Finalist 2004  
*Inflammation, C-reactive Protein & Heart Disease The Rationale for the JUPITER Trial*. 2003. Telly Award Finalist 2004.
- Pantimumab: Amgen. *A fully human anti-epidermal growth factor receptor antibody*. Visual story development. 2004.
- Coreg<sup>®</sup> (carvedilol) Novartis *Cardioprotection with Comprehensive Adrenergic Blockade*. 2004.
- CC5013 Thalidomide analogue Celgene *ImiDs™ - Multiple Mechanisms Acting in Concert*. 2003.
- Actonel<sup>®</sup> (risedronate sodium) Bisphosphonate Aventis/Proctor & Gamble *Influencing Bone Remodeling in Osteoporosis*  
Rx Club: Award of Excellence: Physician Education 2004; SIGGRAPH Animation Theater 2003; International Health & Medical Media Awards Freddy Finalist 2003.
- Arava<sup>®</sup> (leflunomide) Aventis *Psoriasis: Looking Beneath the Surface*. Winner CINE Golden Eagle Award. 2002.
- Protonix<sup>®</sup> (pantoprazole sodium) Proton pump inhibitor. Wyeth *Protonix and the Treatment of Erosive Esophagitis*.
- Starlix<sup>®</sup> (nateglinide) Novartis *A Closer Look at Early Phase Insulin Response*. 2000. Warren Sturgis Award for Motion Media; BioImages Annual Media Exhibition; Telly Awards: Finalist, Bronze; Non Broadcast Film/Video - Animation.
- Axert<sup>®</sup> (almotriptan malate) Pharmacia Full color illustrations and content editing of sales training manual 2001-2002.
- Toprol<sup>®</sup> and Toprol XL<sup>®</sup> (metoprolol) AstraZeneca *Heart Failure*. 2000.
- Orzel<sup>™</sup> (leucovorin calcium) Oral 5-FU Bristol-Myers Squibb Co. *Colon Cancer: Physician MOA of Orzel*. 1999.

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**selected bibliography of educational textbooks illustrated**

- Henretig and King. *Textbook of Pediatric Emergency Procedures*. Williams & Wilkins, 1st Edition 1997, 2nd Edition 2007.
- Pfeffer, Glenn et al. *The 2003 Body Almanac Your Personal Guide to Bone and Joint Health at Any Age*. American Academy of Orthopaedic Surgeons.
- Goldstein, Ronald E. *Change Your Smile*. Quintessence Books, 1997
- Rowe, M.I., et al. *Essentials of Pediatric Surgery*. Mosby, 1995.
- Heckman, M.D., *Emergency Care and Transportation of the Sick and Injured*. Sixth Edition, American Academy of Orthopaedic Surgeons, 1995.
- Ludwig, S. and G. Fleisher. *Pediatric Emergency Medicine*. 1st, 2nd, 3rd & 4th Editions. Williams & Wilkins, 1979-1999.
- Bensimon. H., *Urologic Surgery*. McGraw Hill Publishers, 1990.
- Gillenwater, et al. *Adult and Pediatric Urology*. YearBook Medical Publishers, 1987. Art Editor and Illustrator.
- Harvey, et al. *The Principles and Practice of Medicine*. 21st Edition. Appleton-Lange, 1984.

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**graduate student research committee chaired:**

Samantha Bond. *Media Delivery Analysis in Pediatric Cleft Patient and Caregiver Education*. May 2016.

Melanie Conrad. *Self-Perception and Autonomy in Alveolar Cleft Pediatric Patients*. May 2016.

Eva Mae Natividad. *Multicultural Considerations to Promote Visual Communication in Cleft Lip Animations for Pediatric Patient and Caregiver Education*. May 2016.

Samantha Olson. *Visualizing Anatomy in Craniofacial Patient Education Animation: Best Practices in Generating Comfort & Understanding*. May 2016. Vesalius Trust Scholar 2016.

Rayshueh Ku. *Multimedia Visual Aids for Pharmaceutical Business Presentation: Visualizing the Novel Drug Mechanism for Alzheimer's Disease*. May 2015.

Robert Shonk. *TyrantCroc: Reconstruction and Visualization: an inquiry into the role of visualization media in the reconstruction of incomplete fossilized remains*. May 2015.

Jill Tessler. *Development of "Virtual Instructor" Hands and Appearance Presets for a Simulation Training Environment for Central Venous Catheter Placement*. May 2015.

Caitlin Lohr. *Medical-Legal Case Illustration: The Impact of a Personalized Rather Than Anonymous Visual Representation of a Plaintiff's injury on Juror Empathy as Measured by Non-Economic Damage Awards*. Anticipated June 2015.

Amani Al-Tarouti, MD. *Transformation of Complex Data Output from the Multi-Electrode Electroretinogram into a Comprehensible Visual Display*.

Abigail Richbourg. *Interacting with collagen: How an interactive web application can further the understanding of collagen's structure and function*. May 2014.

Amy Sojka. *A Guide to Visual Representation of G-Protein Coupled Receptors (GPCR) for the Medical Illustration Community*. May 2014.

Melanie Upchurch. *Current issues in Macromolecular Visualization: The Analysis of Usability Concepts within the Protein Data Bank as applied to the Database Application Interact with Collagen*. May 2014.

Natalie Doolittle. *History Sticks in the Ink: Showcasing the Past for the Benefit of the Future*. May 2013.

Corin Steadman. *Interactive Applications for Parental Education on Serogroup B Meningococcal Meningitis and Infant Immunization*. May 2013.

Evelyn Maizels, MD, PhD. *Development and use of the multimedia presentation and evaluation program CEVL (Computer-Enhanced Visual Learning): building a three-dimensional digital model of the pediatric inguinal region*. May 2010. Vesalius Trust Alan Cole Scholar 2009.

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**graduate student research committee member:**

Mao Miyamoto. *Developing a Virtual Lab to Teach Essential Biology Laboratory Techniques Involved in Solution Preparation*. June 2016.

Ali Padilla. *Non-invasive three-dimensional reconstruction of human paleontological remains*. May 2015.

Meredith Hoffman. *Visualization of the Pathology of Mild Traumatic Brain Injury (mTBI) for the National Museum of Health + Medicine Chicago*. May 2015.

Faith Simunyu. *Developing a Virtual Pre-Lab: Understanding the Cation Exchange Chromatography Procedure in the Yeast Cytochrome c Purification Lab*. May 2015. Vesalius Trust Scholar.

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**graduate student research committee member continued:**

Madeline Lee. *Visualizing the Development of Upper and Lower Limbs: Formation of Dermatomes during Weeks 4 - 8 Human Development*. May 2015. Vesalius Trust Scholar

Katja Tetzlaff. *Transgender and Gender Nonconfirming Healthcare: Illustrated Educational Materials*. May 2015.

Dorothy Fatumnbi. *Increasing Physician understanding of the external factors influencing bone health through interactive visualization*. December 2014.

Rex Twedt. *Integration of augmented reality technology and physical display of a 3D printed model of hand anatomy for mobile teaching application with Unity 3D game engine*. May 2014. Cari Jones. *Visualizing Adaptations in the Woodpecker's Skull Which Confer Traumatic Brain Injury Resistance*. May 2014. Vesalius Trust Scholar.

Caitlin Johnston. *The Effectiveness of 3D Animation in Medical Students' Understanding of Diagnostic Procedures of the Shoulder*. May 2014.

Sarah Hegmann. *Development of an Educational Interactive Three-Dimensional Application for Canine Cranial Nerve Study*. May 2013.

Leah Moak. *Visualizing the Effects of Polybrominated Diphenyl Ethers (PBDEs) on the Thyroid Hormone Pathway and Fetal Neurodevelopment through 3-D Animation*. May 2013.

Michael Moran. *Developing a 3D immersive resource on Parkinson's Disease in the online virtual world Second Life*. November 2009.

Kristin Luther. *Micro/Macro: an interactive resource on relative size*. May 2009.

Juna Kurihara. *Visualizing the right hepatectomy procedure using the DaVinci surgical system - designing an interactive for surgeons*. May 2008.

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**invited presentations**

*Illuminating the Science of Life*. Illustrated Body Conference. UCLA Center for Medieval & Renaissance Studies | Feb 2015.

*Visualizing the Body Beautiful*. 2012 Philadelphia Science Festival Signature Program | PAFA. April 2012.

*Rewards of Professional Complexity: Medical Visualization*. Lecture | University of Illinois Chicago. November 2010.

*Presentation Speech for the Association of Medical Illustrators' Lifetime Achievement Award to William B. Westwood*. Association of Medical Illustrators Annual Meeting | Portland. July 2010.

*Roundtable: Your Future as a Self-employed Medical Illustrator - Starve, Survive or Flourish?* Association of Medical Illustrators Annual Meeting | Portland. July 2010.

*Techniques Showcase: Getting Started with Story boarding for Animation*. AMI Meeting | Portland. July 2010.

*Science Visualization's Role in Medical Advertising*. Euro RSCG Life Catapult | Princeton, NJ June 2009.

*Futures Forum: Learning Curve or Curve ball: Anticipating an Uncertain Future*. Association of Medical Illustrators Annual Meeting | Indianapolis. July 2008.

*Presentation Speech for the Association of Medical Illustrators' Lifetime Achievement Award to Jane Hurd* Association of Medical Illustrators Annual Meeting | Indianapolis. July 2008.

*Panel: The Artist Maintaining Perspective in 'Evolution of Medical Illustration as a Profession'*. Association of Medical Illustrators Annual Meeting | Phoenix. July 1995.

*Workshop: Medical Illustration Source Book Page Design*. Association of Medical Illustrators Annual Meeting | Orlando. 1994.

*Color Separation for the Medical Illustrator: Avoiding Professional Suicide in Living Color*. Prepared and moderated panel discussion. Association of Medical Illustrators Annual Meeting | Chicago. 1992.

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**honors and awards**

Lifetime Achievement Award. Association of Medical Illustrators. Atlanta 2016.

Elected Artisan Membership International Guild of Miniature Artisans May 2014.

Muriel McLatchie Miller Fine Art Award. Toronto, Canada July 2012.

Grant Reviewer. U.S. Department of Education. Professional Development for Art Educators. 2005.

Outstanding Service Award. Association of Medical Illustrators. 1993.

Awards of Excellence. Rx Club Show. (Eight)

Judge. Association of Medical Illustrators Annual Salon Exhibition World Congress Salon 1994, 1998, and 2008.

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**education**

Study of Portrait and Figure Painting. Studio of Richard Halstead. Evanston, Illinois. January 2011 - December 2013.

International Guild of Miniature Artisans Guild School. Castine, Maine. June 2008 and 2008. Studied miniature painting with Johannes Landsman of Victoria, BC.; sculpting the 1/12th scale figure with James Carrington of London; and miniature furniture construction with Pam and Pete Borum of New Hampshire.

Paramedic Training. Illinois Region X. Highland Park Hospital. Highland Park, Illinois. 2002.

Emergency Medical Technician Training. Evanston Northwestern Hospital. Evanston, Illinois. 2001.

Creative Advertising 101 at Leo Burnett. Chicago, Illinois through Northwestern University.

The Johns Hopkins University School of Medicine. M.A. Department of Art as Applied to Medicine. Baltimore, Maryland.

Mayo Clinic. Internship: Department of Medical Graphics. Rochester, Minnesota.

The Pennsylvania Academy of the Fine Arts. Studied painting with Arthur DeCosta. Philadelphia, Pennsylvania.

Muhlenberg College B.S. Natural Science, B.A. Fine Art. Allentown, Pennsylvania.

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**professional affiliations**

Active, Professional Member, and Fellow of The Association of Medical Illustrators.

Member, Accreditation Review Committee for the Medical Illustrator. 2005 - 2016.

Immediate Past President. July 2013- 2014. President. July 2012 - 2013. President elect. July 2011 - 2012.

Editor, Medical Illustration Source Book. [www.medillsb.com](http://www.medillsb.com) 2005 - 2014.

Chairman, Medical Illustration Source Book Editorial Board 1991-1994 and 1999-2000.

Member, Board of Governors. 1994 - 1998, 2011 - 2014. Member Executive Committee. July 2011 - 2014.

Chairman, Professional Liaisons Committee 1996-1999.

Member of Contracts Committee 1991-1995.

Chairman, Student Affairs Committee, 1978-1979.

Member, Midwest Microscopy and Microanalysis Society

Member, Fellowship of the Pennsylvania Academy of the Fine Arts (PAFA).

Artisan Member, International Guild of Miniature Artisans.