New Faculty Orientation: Research

Maja Mataric’
Vice Dean for Research
About the Presenter

- Undergrad University of Kansas, PhD MIT 1994
- Asst. Prof of CS at Brandeis ‘94-’97
- Joined USC in 1997 as an assistant professor
- Assistant (1st kid ‘98) → associate (‘01) (2nd kid ’02) → full (’06) (3rd kid ‘09)
- Center director (RASC), Viterbi WiSE Chair, Academic Senate President, Vice Dean for Res.
- Provost’s Strategic Planning Committee, Mentoring Steering Committee, Trustee Academic Affairs Committee, Senate Executive Board, University Committee on Appointments, Promotions and Tenure (UCAPT)
- Research: intelligent robotics, from robot teams to socially assistive robots for rehabilitation, training, and education
- Funding: NSF, NASA, NIH, DoD, DoE, DoEd, foundations, industry gifts

Academia is a great place to continually invent yourself, but do so wisely
Goal & Methods

Goal: Facilitating and Enhancing Research Excellence

Methods:
- A set of programs for junior faculty
- Active dissemination of opportunities (gist & web)
- Connecting with the Office for Research
- Connecting with other USC schools & units
- Help with center and other large-scale proposals
- VICI fund for incubating centers
- Visioning exercises and strategic initiatives
- Awards nominations
- Viterbi Research Committee

https://viterbischool.usc.edu/researchandinnovation/
Junior Faculty Programs

- At least one mentor, preferably two, for pre-tenure faculty
  - mentoring lunches, meetings, other ways to facilitate
- Funding for travel to meet with sponsors
  - if not already in startup package
- Internal review program for NSF Career proposals
- “Best practice” advice for early career/young investigator program
- Viterbi support for YIP proposals, especially broader impact
  - E.g., reduced indirect costs
- Directed dissemination of YIP funding opportunities
- Dedicated web site with opportunities
  (http://viterbi.usc.edu/resaerch/info/funding-opportunities-for-junior-faculty.htm)
University & Viterbi Research

• USC is a Research I university
• USC has consistently risen in national research volume rankings:
  • In total research expenditures (>\$500M): around 10th among private and around 25th among all (ahead of Yale & Harvard)
  • In federal expenditures (>\$200M): 10th among private and 19th among all (ahead of Yale)
  • Viterbi is the 2nd largest contributor (after Keck/Medicine)
• Viterbi’s research expenditures are about 1/3 of USC’s; this includes all engineering-affiliated centers and faculty and all types of research funding (federal, corporate, and private)
• The funding portfolio is distributed over various sources
Interdisciplinary Research

• USC spotlights **societally relevant research**; such research is inherently interdisciplinary (read USC vision doc)

• Interdisciplinarity is a major strength of USC

• Take advantage of our varied strengths in the numerous schools: Keck, Annenberg, Dornsife, Dentistry/Kinesiology, Gero, Cinematic Arts…

• BUT: pre-tenure interdisciplinary research has risks:
  • Must show a major contribution in at least one field, cannot straddle and be OK “overall” or “on average”
  • Promotion letters needed from recognized major figures in the field
  • If you are defining a new area, make sure it is recognized and considered a contribution; give talks far and wide, and publish in recognized established journals with good impact factors
• Under Vice President Randolph Hall (formerly of Viterbi)  
  – reports to the Provost
• **Purpose**: help faculty in the process of research:
  • University-level strategy, initiatives, partnerships
  • Training courses via the Center for Excellence in Research (CER)
  • Shared equipment cores
  • Cost-share on center proposals
  • Internal funding programs
  • Funding information dissemination
  • Match-making with funding agencies, program directors & managers
  • Announcing opportunities
  • Washington DC branch

[https://research.usc.edu](https://research.usc.edu)
Washington DC Branch of USC Office of Research

https://research.usc.edu/about/vp/dc/

- Steve Moldin, Executive Director, most experience with NIH
- Jim Murday, DoD expertise, especially nano & energy
- Al Olson, intelligence community & other services
- Internal NSF experience from several NSF staff and rotators
- Multiple consultants in DC
- Facilitate large grants, meetings with DC funders, workshops in DC and locally, visits by funders...

- First contact: Vice Dean Maja Mataric’ (mataric@usc.edu)
  - Connection to the Vice President
  - Connection to the DC Office and Steve Moldin
Center for Excellence in Research (CER)

https://research.usc.edu/about/vp/cer/

• A Senate-Provost initiative that originated in the University Research Committee by M. Matarić

• The USC Office of Research supports and houses the program and offers a menu of information and training workshops about obtaining funding from various federal agencies, industry, foundations, etc.
University Research Committee (URC)

- Joint Academic Senate and Provost Committee
- Advises the Senate, Provost, and VP for Research
- Often lead by a Viterbi faculty member

Activities:
- Established the DC office for Research
- Recommends strategic partnerships
- Advises on research administration and tools
- Works on operationalizing interdisciplinary research

Example of high-impact university service committee; usually more senior faculty are selected
Internal Funding Opportunities: University Level

https://research.usc.edu/

- Zumberge: small w/ mentor ($10K, year-round) and large interdisciplinary ($85K, annual), competitive
- Collaborative Research Fund ($30K/year, up to 3 yrs)
- Core Instrumentation ($300K), as-needed cost-share (up to $200K), also technician funds
- WiSE: undergrad ($5K/semester), grad top-off, faculty support (up to $50K every 4 yrs), travel ($2500/year)
- Initiatives:
  - Clinical and Translational Health Science ($50K-$80K/year)
  - Ming Hsieh Institute for nanoscience for cancer
  - Many others, see next slide and web page
Internal Funding Opportunities

https://research.usc.edu/for-investigators/funding/

Collaboration Fund; Core Instrumentation Fund; Donald E. & Delia Baxter Foundation Faculty Fellows Program; Eli and Edythe Broad Innovation Award; METRANS Transportation Center; Ming Hsieh Institute for Research for Engineering-Medicine for Cancer; Mousetrap Fund; Pfizer’s Center for Therapeutic Innovation (CTI); Rose Hills Foundation Innovator Grant Program; Rose Hills Foundation Science and Engineering Fellowships; Saban Research Institute Cores; Southern California Clinical and Translational Science Institute (SC CTSI); Southern California Environmental Health Sciences Center; Southern California Research Center for ALPD & Cirrhosis; Technology Advancement Grants (TAGs); USC Alzheimer Disease Research Center; Undergraduate Research Associates Program; Viterbi Research Innovation Fund; Women in Science and Engineering (WiSE); Zumberge Faculty and Research Innovation Fund
Viterbi Internal Center Incubator (VICI)

- Arid Climate and Water Research Center (AWARE)
- Center for Artificial Intelligence in Society (CAIS)
- Center for Cyber-Physical Systems and the Internet of Things (CCI)
- Center for Human-Applied Reasoning and the Internet of Things (CHARIOT)
- Center for Peptide and Protein Engineering (CPPE)
- Center of Machine Learning (MaSCle)
- Robotics and Autonomous Systems Center (RASC)
- SleepHub
- Vertex Center
Contracts & Grants Administration

- **Central**: Dept. of Contracts and Grants (DCG), run by Jeri Muniz, under the VP for Research Randolph Hall; *submits ALL proposals*
  - Compliance with federal and other funding submission regulations

- **School-level**: Viterbi Business Office (VBO), *approves proposals before proceeding to DCG & submission*; Viterbi contact to DCG: Nichole Philips, Director of Viterbi Research Administration

- **Local/department-level**: Your dept. business manager, *prepares proposals and submits to VBO*

- These are **services BUT please**:
  - Be mindful of people involved and timing expectations
  - Read the memos
  - Report problems to Nichole Philips
Overhead

- Overhead = indirect cost, facilities and administration
- Pays for operating expenses of the university & school
- Overhead rate is 65%, determined by USC not Viterbi
- On par with comparable universities
- Of that 65%, ~12 pts (19%) goes to the Central USC Facilities Fund; there is also an overall participation tax (6%)
- Research is not really a revenue source
- Things that do not incur overhead:
  - Equipment (> $5,000)
  - External participant support (only first $25k of subs are subject to overhead)
  - Agency-mandated no overhead programs (see cost-share)
Cost-Share

- Cost-Share = Viterbi’s subsidy for a specific effort/proposal; a cost to the school
- Indirect costs can be cost-shared under appropriate conditions; this is an income loss for the school
- Some universities don’t give it (e.g., MIT, Stanford)
- Some federal grant programs and some foundations require it

- All cost-share requests must be submitted through the on-line cost-share system at least 2 weeks prior to the proposal submission deadline (at least a month for centers)
Viterbi Dissemination of Opportunities

- Weekly Research Gist
  - Funding opportunities
  - Local meetings/workshops
  - Research-relevant university announcements
- Comprehensive research portal: https://viterbischool.usc.edu/researchandinnovation/
- Funding opportunities
  - Faculty research topic database
  - Pre-award and post-award policies
  - University and Viterbi Initiatives
  - Research cores
  - Research-relevant resources
Early Career & Young Investigator Awards

- Many agencies have early career awards: NSF, NIH, ONR, Army, Air Force, CDMRP, etc.
- Your odds of getting these are higher than for other types of grants
  - E.g., NSF CISE 20% funding rate for CAREER <10% for standard grants
- These are often considered prestigious (e.g., NSF CAREER, ONR Early Career) and lead toward higher-level honors & awards (NSF and other PECASE awards)
- These pave the way for future awards from the same agency
- These help you get tenure (some type of YIP award is basically expected for promotion in Viterbi)
Almost all of our assistant professors get these
You can apply up to 3 times
Plan strategically and be ready:
  • Contact the relevant agency program director to learn more and discuss your plans
  • Take the Provost’s training course in May
  • Participate in the internal review program
  • Take broader impact very seriously (for all NSF grants, not just CAREER); it may decide if you get funded among the top candidates

This advice applies to all other early career proposals as well
Broader Impact

• Federal agencies are increasing their focus on broader impact & outreach
• A web page or a standard course not sufficient; instead, consider:
  • A well thought-out outreach program
  • K-12 teacher training & local school visits
  • Partnership with a public institution (e.g., California Science Center)
  • Many more good models, be creative
  • Example: NSF RET Program (supplements and sites) and GK-12 Program (BE-LA)
• Societally relevant research is a key tenet of the USC Vision
• Dr. Katie Mills from VAST helps each faculty member individually design a broader impact program for Career and other proposals
Research Centers

https://viterbischool.usc.edu/research-centers/

• Research centers of excellence are a means of facilitating high-impact usually interdisciplinary research
• Viterbi has many centers
• Participate, enhance your research, collaborate, leverage

• BUT: keep your research contribution clear and identifiable
• AND: don’t get involved in a major service role before tenure (e.g., Education Director, Outreach Director, etc.)
Facilitating Centers & Large Proposals

• Center proposal coordination by Nichole Phillips
  • Graphics support
  • Grant writer/editor support
  • Grant writing training for Viterbi staff
  • Budget and admin support
  • Short-term teaching release
• Streamlined space request negotiation (Linda Rock)
• Streamlined cost-share procedures (on-line form)
• Interaction with the VP for Research
• (support for interdisciplinary=multi-school proposals)
Viterbi Awards Office

- Role: to serve as a resource to Viterbi faculty and department chairs in nominating our Viterbi faculty for national and international awards, fellow and advisory committee opportunities
- Structure: two staff members (Kim & Kelly)
- Activity stats: ~ 90 nominations/year, ~30% success rate

- Point of contact:
  - Kim Matsunaga (kim.matsunaga@usc.edu)
  - If you feel ready to be nominated for an award, make sure to contact Kim, your department Chair, or me
Awards Notification Tool

• Purpose: notification, tracking, and recognition of faculty awards
• **Faculty** enter their own awards on myViterbi site. Dept. chairs screen and distribute.
• Types of awards to be reported: best paper awards, society awards, fellowship distinctions, and national and international awards.
• No grants and contracts, with the exception of Early Career Awards/Young Investigator Awards/Pioneer Awards which are also distinctions.
Viterbi Core Infrastructure Labs

https://viterbischool.usc.edu/shared-research-infrastructure/

- Shared labs with user fees:
  - CEMMA
  - Keck Photonics Lab
  - Rapid Prototyping Lab
  - RTH Clean Room
  - Machine Shop
- Programs:
  - Provost’s Core Infrastructure Initiative
  - NSF Major Infrastructure Program (MRI)
  - DoD DURIP Program
- Disseminating infrastructure funding opportunities
- Networking with existing centers & institutes to leverage resources
Corporate & Private Funding

- Corporate and Foundations Relations Office: Todd Logan
- Foundations: Maria Zamora
- Special RFPs with partnering companies (GE, Lockheed Martin)
- IP negotiations can be lengthy...
International and Industrial Partnerships

- International Collaborations: Raghu Raghavendra
  - India: Infosys center with India
  - Korea: Korean Air and Korea Universities alliances
  - Pratt and Whitney Institute for Collaborative Engineering
  - See Viterbi Globalization site: [https://viterbischool.usc.edu/globalization/](https://viterbischool.usc.edu/globalization/)

- Industrial Partnerships: Todd Logan
  - CiSoft Center funded by Chevron; good model for other centers
  - AIRBUS
  - KAGERIIC – Korean Air + General Electric Research Institute
  - Other possibilities – Northrop-Grumman, Boeing, AT&T/SBC
New Research Initiatives Program

- Overseen by Mahta Moghaddam and closely coordinated with Research Vice Dean
- Ideation, team-building, and implementation of new research initiatives
- Coordination between faculty research (including Viterbi research centers), industry partners, and Advancement activities
- Coordination of convergent research initiatives between USC Viterbi and other entities both on-campus and off-campus
- Targets of specific active pursuit:
  - NSF ERC, STC, and MRSEC proposals
  - MURI
d  - NIH centers
  - DoE EFRC, DoD centers, EPA SCPC
  - Corporate and Foundation relationships for basic and applied research
Average Expectations: The Dean’s Vision

- At least 3 GRAs funded per year
- Fellowships and TAs are in addition to that
- 25% GRAs not allowed on grant budgets
- One PhD graduated per year, one new PhD student taken on
- 5 years in the PhD program per student: 1 as TA, one as fellow, and 3+ as GRA (no fixed order)
- Each faculty member should submit at least 2 proposals per year as PI, the range goes to 30+
- Co-PI and other roles are extra and encouraged
- These are minimal numbers: do the calculation for how much it takes to sustain a pipeline of 3+ GRAs given funding rates (~10%) and plan proposal submissions accordingly
Pointers for Getting Research Funding

• The economy can always be in better shape; research support has been steady, no telling what will come next (the DC Office will keep us informed)

• Basic advice:
  • Connect with program managers/administrators at federal agencies, go to visit, talk to them
  • Serve on review panels as much as possible
  • Read winning proposals and get people to read your proposals and give you honest feedback
  • Talk to research mentors about the content of your research and your research strategy
  • Get your students engaged early in research, writing papers, and helping with proposals
  • It is necessary to be strategic and well prepared
We Are Here to Help

- Mentoring programs (this is part of it)
- Tracking proposal submissions
- Tracking research involvement (co-PI, senior/key personnel, student supervision, etc.)
- Faculty forums with key visitors:
  - luminaries
  - representatives from funding agencies
- Weekly research gist
- Memos with important news
- Research portal
- Special programs for junior faculty, as well as PhD students and postdocs
Resources for Junior Faculty

- Dedicated web content here: https://viterbischool.usc.edu/faculty/faculty-research-resources/funding/
- Fall orientation for junior and new faculty
- NSF Career award internal review program (2 reviews per proposal by previous winners) with Broader Impacts help (Dr. Katie Mills)
- Cost-share on early career awards (except NSF and NIH, where it is not allowed)
- Travel funds for junior faculty
- Reduced teaching load
- Faculty mentoring program
Mentoring

• *Each of you should have a mentor with whom you have a productive relationship*

• All pre-tenure faculty have at least one, preferably two, assigned mentor(s); tell us if it’s working

• HOWEVER: assigned mentors are not always ideal
• Tell us your preferred mentor, and we will work to set it up
• Vice Dean Timothy Pinkston will meet with each of you
• Use the following individuals as mentors: assigned mentor, dept. chair, vice deans, (more) senior colleagues you like

• Take the time to network and talk to people
Keep the Dialogue Going

- **Contact info:**
  - Email is best: mataric@usc.edu
  - Assistant: Marjorie Brownbill: brownbil@usc.edu
    For appointments contact Marjorie

- We move as fast as possible, but please leave enough time for addressing and iterating on issues

- We want you to succeed. Own the school, it’s yours to shape and lead!
### Viterbi Contracts & Grants Approval/Submission Timeline

<table>
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<th>Funding Announcement</th>
<th>30 Business Days Prior to Submission Date</th>
<th>14 Business Days Prior to Submission Date</th>
<th>7-9 Business Days Prior to Submission Date</th>
<th>3 Business Days Prior to Submission Date</th>
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<td>Notification of Intent to Apply: Notify your department's business manager and/or research administrator of your intent to apply for a funding opportunity. This is done so to ensure that all compliance (internal and external) requirements are met in time. For solicited awards, forward a copy of the funding solicitation. For unsolicited awards, please advise the contact that it is an unsolicited award, and forward any available correspondence with the sponsor regarding the parameters of the award. Administrators should then notify the Viterbi Research Administration Office and send links and/or pdfs of funding solicitations, if applicable.</td>
<td>Cost Sharing Approval for Center Proposals: Please submit a request via the on-line cost sharing request form found at <a href="http://viterbi.usc.edu/intranet/vba/contracts_grants/">http://viterbi.usc.edu/intranet/vba/contracts_grants/</a>. A draft budget is required when the request is submitted. <strong>Note: Please refer to the Viterbi Cost Sharing policy found at the website.</strong></td>
<td>Cost Sharing Approval for Regular Proposals: Please submit a request via the on-line cost sharing request form found at <a href="http://viterbi.usc.edu/intranet/vba/contracts_grants/">http://viterbi.usc.edu/intranet/vba/contracts_grants/</a>. A draft budget is required when the request is submitted. <strong>Note: Please refer to the Viterbi Cost Sharing policy found at the website.</strong></td>
<td>To the Viterbi Business Affairs - Research Administration (VBA-RA) Office: The on-line TARA Pre-Award routing packet should be received by the VBA-RA Office. The routing Packet consisting of the completed on-line information; Cover Page (if applicable), Budget, Budget Justification (if applicable) and Scope of Work/Technical Justification, if Grants.gov (tab needs to be partially completed with administrative information). Once approved, the application packet will be forwarded to the University's Department of Contracts and Grants for final review and approval. In addition, you or your department administrator should begin the process of uploading all sponsor required documentation onto the electronic submission platform (Fastlane, System 2 System (Grants.Gov), NSPIRES, etc.) to enable the Office of Contracts and Grants to begin the review process.</td>
<td>For All Contract and Grant Submissions: All sponsor required documentation, including the final Scope of Work/Technical Justification, must be uploaded onto the electronic submission platform (Fastlane, System 2 System (Grants.Gov), NSPIRES, etc.) for final review and approval by the University's Department of Contracts and Grants. The Department of Contracts and Grants will contact you or your research administrator if any changes or corrections are needed prior to submission.</td>
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The **standard TARA Routing Packet** is the completed University application documents that consists of the TARA Proposal application tabs completed, Cover Page, Budget, Budget Justification, Scope of Work/Technical Justification and Sponsor Funding Solicitation (solicited awards only).

**TARA (Total Access to Research for Research Administration)** is the University's official record to document all contract and grant submissions. Prior to submission for University review and approval, on-line approvals must be obtained from the Principal Investigator, Co-Principal Investigators, and Dean designee. If interdisciplinary with a co-PI from another school then will need the Dean designee approval from the other school.

Any **Space/Facilities Requests** need to be either approved by the department chairman or submitted to Linda Rock, Vice Dean for Administration. This should be done following the minimum dates set for cost sharing and uploaded in the appropriate section of the TARA on-line proposal document.

The **Budget** documents the direct and indirect costs associated with a contract or grant application. Typically, these cost include: salaries of personnel who will be supported full or part time on the project, fringe benefits, materials and supplies, equipment, student tuition and travel.

The **Scope of Work/Technical Justification** outlines the work to be performed. A draft copy of this document is acceptable when submitting as part of the TARA routing packet.

Please note the dates given are minimum dates and earlier submission of requests and proposals is preferred.
Proposal Checklists

The following is the list of necessary information for various types of proposals:

If USC is the Subcontractor or Subawardee:

☐ Start date from the Lead Organization
☐ Duration of the project from the Lead Organization
☐ Funding Level from Lead Organization
☐ Title of the Proposal from Lead Organization
☐ Administrative contact at the Lead Organization
☐ Who to send the USC final documents to at the Lead Organization

NSF Collaborative Proposals:

☐ Start date from the Lead Organization
☐ Duration of the project from the Lead Organization
☐ Funding Level from Lead Organization
☐ Title of the Proposal from Lead Organization
☐ Who to send our NSF Proposal ID and PIN to
☐ Anticipated submission date and the contact of who to coordinate the submission of USC’s section so the submissions are in sync

For all proposals in order for your administrator to complete the TARA routing package:

☐ RFP or at least the agency announcement number so it can be downloaded
☐ Title of the proposal
☐ Budget
☐ Budget Justification/Narrative (if required)
☐ Draft of at least the Project Summary
☐ If you have subcontractors you will need to provide contact information to your administrators so they can obtain the needed documents and sign-off

Finally, this is the complete list of needed materials for starting the proposal approval process:

☐ RFP
☐ USC routing document through TARA
☐ Cover Page (Either the required from agency or one of the templates for signature if USC is a subcontract or subawardee; unless submitting System 2 System via Grants.gov tab in TARA)
☐ Budget
☐ Budget Justification/Narrative (if required)
☐ Draft of at least the Project Summary

PLEASE NOTE: If there is a change to the Budget once the proposal has been approved by the Viterbi Business Affairs Research Administration Office it will need to be rerouted through the approval process in TARA.

Revised 07/28/2016
BASIC ACCOUNTING PRACTICES FOR SPONSORED PROJECTS
A quick guide for Faculty and Staff

As a rule of thumb, a faculty member and his/her research administrator should meet at a minimum once per fiscal quarter to review account balances, spending rates, and project end dates, in order to help formulate a plan for the fiscal and academic calendars. The level of communication and the number of meetings may need to increase at particular times during a sponsored project, such as at the beginning of a project, around annual report time (if applicable), and in the last 120 days of an award.

Holding such regular meetings is crucial to: keep on a consistent spending path to alleviate a high carryover from occurring; communicate any upcoming expenditure and/or travel plans; and ensure proactively that the account is budgeted properly. Such meetings should include planning for no-cost extensions or advance funding options so as to ensure that these steps are processed in time, per the agency guidelines.

For Federal Awards, USC is governed by the Federal Government in OMB Circulars A-81 and A-21 for spending practices. (The URL for the Federal Circulars is found below.) There are four key factors for evaluating whether a cost can be charged to an award:

1) The cost must be Reasonable (e.g., equipment usually needs sole-source justification or competitive bidding to ensure this, which can delay large purchases)
2) The cost must be Allocable to the project
   a. It is incurred solely to advance the work under the sponsored agreement
   b. If splitting with one or more projects it must be done in proportions that can be approximated through use of reasonable methods
   c. Is deemed assignable in whole or part to the sponsored project
3) The cost must be Allowable
4) The cost must be given Consistent treatment
   (Think RAAC when remembering the basic principles)

Some key items that are unallowable on federal awards are alcoholic beverages, alumni activities, general office supplies, and first/business class travel; a comprehensive list of expenditures and whether they are allowable can be found in the OMB Circular A-21 section J.

Budget Reallocations on Federal Awards are governed by OMB Circulars A-81 and A-110 and agency requirements. In addition to these requirements, there are also instances when an award may have additional restrictions for re-budgeting. It is important to review the award document carefully when received. Below is a list of the general restrictions:

- Any changes to the scope of work require sponsor approval.
- Any Reduction of the PIs effort by more than 25%. Sponsor approval is needed for such reductions and will need to work with the Department of Contracts and Grants for proper agency approval.
- Both NIH and NSF require preapproval prior to reallocation of funds that are directed for Participant or Trainee Support Costs.

The following link takes you to where both OMB Circulars covering the policies mentioned above are located: https://www.whitehouse.gov/omb/information-for-agencies/circulars#educational