UVA School of Medicine Academic Strategic Plan

RESEARCH MISSION WORK GROUP REPORT

May 2014
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VISION and GOALS

VISION: UVA will be recognized as an international leader in innovative, collaborative and transformative research that is noted for its exceptional science and its significant and sustainable impact on fundamental knowledge and human health.

PREAMBLE: An exceptional research program embodies a balanced portfolio of basic, translational and clinical research that is mutually reinforcing, and that advances the academic and clinical missions of the University of Virginia. Our challenge is to identify opportunities for strategic investment and enact organizational change with the goals of fostering innovative research by building on strengths, closing critical gaps in expertise, and creating synergies. Basic science provides a foundational strength of UVA SOM upon which to build an enhanced translational and clinical research enterprise that draws on that strength and contributes to growth across all areas of the biomedical sciences. Integration of these diverse research endeavors generates an intellectual and financial robustness that will ensure the sustainability of the research enterprise.

Goal #1: Promote collaborative, interdisciplinary science and pioneering research with an emphasis on recruiting and retaining exceptional researchers that form synergistic partnerships generating transformative science.

Collaborative science enables investigators to tackle large problems that require diverse expertise, it taps into a major trend in funding agencies, it provides a venue for continued success for investigators who have lost funding, and it generates “critical masses” that enhance external recognition for UVA science. Collaborative science enhances all categories of science (basic, translational and clinical). It may include teams of any size, and can unite investigators in different disciplines, including those in any other UVA school, and beyond the boundaries of UVA. High priority should be placed on supporting new initiatives of exceptional promise and building synergistic scientific partnerships that promote transformative science and scientific differentiation.

Goal #2: Broaden UVA SOM funding base in order to maximize research potential.

UVA SOM requires creative strategies to maximize financial support for research in the current funding climate, and generate sustainable funds to protect our investment and optimize our ability to achieve long-term institutional goals. We need to capitalize on local, regional, national and international financial resources, public and private. This will provide support for new initiatives, recruitments and retentions, enhancement of research resources and facilities, and safety-net funding.

Goal #3: Enhance research efficiency by strengthening the infrastructure and reducing regulatory and administrative barriers.

Regulatory and administrative responsibilities of research faculty have burgeoned to a point that prevents UVA SOM from attaining its maximal research potential. Simplifying or reducing regulatory barriers will increase the time spent on research activities and thus, enhance research productivity, improve morale, and foster innovation and creativity across all areas of research.
LIST OF QUICK WINS*

1. Reduce animal costs by 50% to levels that are comparable at peer institutions.

2. Reduce usage fees (by 25%) of “high value” research cores by increasing their funding.

3. Reduce personnel expenses on NIH grants by covering fringe benefits costs through SOM.

4. Establish a major funding source for collaborative science to promote programs that differentiate UVA SOM, and position us for large federal multi-investigator grants.

* High impact solutions that can be implemented rapidly (within 6 months).
PRIORITIZED INITIATIVES and SOLUTIONS

Initiative #1: Facilitate the coalescence of exceptional interdisciplinary collaborative science groups performing differentiating research.

Desired Outcome: Increase the number of collaborative, multidisciplinary research projects and new initiatives of exceptional promise. Metric: 1) Enhanced connectivity among UVA investigators and between investigators at UVa and other (national and international) institutions leading to increased multi-PI grant awards and co-authored publications and patent applications; (2) Increased grant awards, publications and patent applications from innovative research.

Solutions:
1. Establish a major funding source for collaborative science to promote programs that differentiate UVA SOM, and position us for large federal multi-investigator grants.
2. Identify and increase support for new initiatives of exceptional promise and for areas that cut across and synergize with multiple disciplines (e.g., genomics/epigenomics; infection/inflammation/immunology; big data/bioinformatics; nanomedicine).
3. Provide seed money to support pilot projects of newly formed groups of top-tier scientists.
4. Develop mechanisms for faculty recruitment and retention that do not depend on departmental interests.
5. Generate an environment in which all team members can contribute the requisite time and receive proper recognition.
6. Improve awareness of scientists of the research environment and expertise in the SOM and across Grounds.
7. Develop a sustainable funding plan for Academic Investigators that is uniform across basic and clinical departments.
8. Foster development of junior faculty and encourage their participation in collaborative science.*

Initiative #2: Enhance all categories of research (basic, translational and clinical) by interfacing and fully integrating the clinical enterprise with the research enterprise.

Desired Outcome: Increase in the size and efficiency of the UVA SOM clinical research enterprise. Metric: Expanded user-base for the biorepository and CRU and utilization of EMR for research purposes. Increased clinical research funding.

Solutions:
1. Facilitate collection of biosamples on patients in the clinical setting.
2. Develop streamlined data retrieval mechanisms for clinical data.
3. Develop the ability to automatically extract data from Epic to the clinical data repository.
4. Expand Biorepository Core services, including allowing for collection/processing of samples outside of normal working hours.
5. Establish mechanisms whereby all SOM and hospital personnel understand the importance of research to our institutional missions and long term financial viability, and equip them with the tools necessary to communicate this to our external stakeholders.**

Initiative #3: Provide maximal support for collaborative science and pioneering research by providing state-of-the-art facilities and expert administrative support to all faculty.

Desired Outcome: Enhance the development of innovative projects and the success of established and newly created collaborative research groups. Metric: Increase external funding,
including the number of multi-PI grant awards, publications, and intellectual property/patent applications.

Solutions:
1. Establish state-of-the-art research facilities by prioritizing the purchase of cutting-edge technologies, funding “high value” Research Cores, and sunsetting others.
2. Enhance biostatistical and bioinformatics support.
3. Provide uniform expert pre- and post-award support for complex grants to all investigators involved in collaborative science.

Initiative #4: Maximize the proportion of funds on existing grants that can be spent on research activities.
Desired Outcome: In order to build our strengths we need an immediate ability to reward excellence. Increased direct investments will increase collaboration, publications, extramural funding, and patent applications. Metric: Increase in NIH SOM ranking by at least 5 spots at the end of the 3rd year (2017).

Solutions:
1. Re-examine indirect cost flows to ensure that they are appropriately utilized.
2. Reduce animal costs by 50% to levels that are comparable at peer institutions.
3. Reduce usage fees (by 25%) of “high value” research cores by increasing their funding.
4. Reduce personnel expenses on NIH grants by covering fringe benefits costs through SOM.
5. Subsidize costs for biostatistics support.

[Initiative #5: Eliminate P&T barriers for collaborative investigators.]
Currently under consideration by a separate work group.

Initiative #6: Reduce redundant and unnecessary administrative requirements.
Desired Outcome: Increased efficiency of the research enterprise resulting in an increase in effort dedicated to scholarly activities. Metric: Increased scientific output (i.e. publications, patent applications, grant applications).

Solutions:
1. Streamline IRB procedures to align with the pace of translational/clinical research, and reduce the burden on scientists by expanding IRB services to support IRB submissions, protocol updates, and communication with regulatory agencies.
2. Assure necessary secretarial support in clinical and lab settings so scientists can concentrate on science.
3. Develop a central cache for all training modules, a common time when all re-training is due, and eliminate unnecessary re-training.
4. Incentivize administrative and regulatory staff to facilitate research by transparently linking their salaries and positions to indirect costs.
5. Develop a comprehensive integrated research management system to facilitate efficient administration of research projects from start to close out in order to maximize researchers’ ability to focus on research.***
Initiative #7: Broaden our funding base beyond NIH.

Desired outcome: New partnerships with external entities on multiple levels, resulting in increased collaboration, publications, patent applications and external funding. Metric: Double non-NIH funding in 5 years.

Solutions:
1. Provide a comprehensive database of non-NIH-funding opportunities.
2. Exploit UVA Innovations to form partnerships with pharma/biotech not only to promote patentable “products”, but also scientific collaborations.
3. Identify new revenue streams (e.g. development of an undergraduate major and MS in biomedical sciences) that can supplement salaries of participants.
4. Enhance research support from the Commonwealth of Virginia
5. Generate a UVA database of translatable products/devices.

* Initiative #8 in final ranking.
** High scoring solution from low ranking initiatives.
*** Originally listed under Initiative #3 (see Appendix).

“Quick wins” are denoted in italics.

See Appendix 1 for ranking of full list of initiatives and solutions, and additional details.
Appendix 1: Full Ranking of Initiatives and Solutions*

Initiative #1: Facilitate the coalescence of exceptional interdisciplinary collaborative science groups performing differentiating research.
Desired Outcome: Increase the number of collaborative, multidisciplinary research projects and new initiatives of exceptional promise. Metric: 1) Enhanced connectivity among UVA investigators and between investigators at UVa and other (national and international) institutions leading to increased multi-PI grant awards and co-authored publications and patent applications; (2) Increased grant awards, publications and patent applications from innovative research.

Solutions:
1. Establish a major funding source for collaborative science to promote programs that differentiate UVA SOM, and position us for large federal multi-investigator grants. Funding for administrative support should be included.
   a. Develop an RFA, create a grant review panel, establish an external scientific advisory board.
2. Identify and increase support for new initiatives of exceptional promise and for areas that cut across and synergize with multiple disciplines (e.g. genomics/ epigenomics; infection/inflammation/ immunology; big data/bioinformatics; nanomedicine).
   a. Develop an RFA, create a grant review panel, establish an external scientific advisory board.
3. Provide seed money to support pilot projects of newly formed groups of top-tier scientists.
4. Develop mechanisms for faculty recruitment and retention that do not depend on departmental interests.
   a. Recruit top-tier faculty to lead group-building initiatives (“cluster hiring”).
   b. Assign faculty lines based on institutional priorities. For example, some lines can be retained by Center Directors for co-recruitment with a Department.
   c. Implement “shared hire” and promotion mechanisms for faculty that cross disciplines in order to optimize integration and fulfill institutional objectives.
   d. Include representatives from SOM/Hospital on search committees for new hires in other schools.
      Note: For rapid implementation: (i) establish 4-6 “institutional” faculty FTE lines with recruiting packages and ongoing salary support per standard departmental packages; (ii) Issue an RFA for joint centers and departments or individual faculty to submit proposals to fill these FTEs.
   e. Retain top-tier scientists through incentivizing initiatives, including creating endowed chairs for research and for junior faculty.
5. Generate an environment in which all team members can contribute the requisite time and receive proper recognition.
   a. Develop mechanisms of research lines that fund Clinical Investigators.
   b. Provide faculty release time for research planning and implementation without being required to also generate the maximal clinical income. (Employ strategic approaches that target specific investigators involved in key projects, and ensure affordability for departments).
6. Improve awareness of scientists of the research environment and expertise in the SOM and across Grounds.
   a. Create forums for basic, translational and clinical researchers to inform one another about how they might contribute to each other’s research.
   b. Create a “town square” to foster interactions between UVA scientists.
7. Develop a sustainable funding plan for Academic Investigators that is uniform across basic and clinical departments.
8. Leverage expertise outside UVA through partnerships with other institutions.
9. Actively engage pre-existing Centers and Institutes in other UVA Schools.
10. Develop educational initiatives for team leaders (e.g., LAM for scientists).
11. Develop multi-institutional research retreats to foster external collaborations.
12. Expand global outreach research initiatives.
   a. Expand global science programs (including Global Scholars Program)
   b. Engage former faculty/alumni who hold senior leadership positions at foreign research institutions.

Initiative #2: Enhance all categories of research (basic, translational and clinical) by interfacing and fully integrating the clinical enterprise with the research enterprise.
Desired Outcome: Increase in the size and efficiency of the UVA SOM clinical research enterprise. Metric: Expanded user-base for the biorepository and CRU and utilization of EMR for research purposes. Increased clinical research funding.

Solutions:
1. Facilitate collection of biosamples on patients in the clinical setting.
2. Develop streamlined data retrieval mechanisms for clinical data.
3. Develop the ability to automatically extract data from Epic to the clinical data repository.
4. Expand Biorepository Core services, including allowing for collection/processing of samples outside of normal working hours.
5. Increase support for health data analysis.
6. Provide additional resources for the Clinical Research Unit.

Initiative #3: Provide maximal support for collaborative science and pioneering research by providing state-of-the-art facilities and expert administrative support to all faculty.
Desired Outcome: Enhance the development of innovative projects and the success of established and newly created collaborative research groups. Metric: Increase external funding, including the number of multi-PI grant awards, publications, and intellectual property/patent applications.

Solutions:
1. Establish state-of-the-art research facilities by prioritizing the purchase of cutting-edge technologies, funding “high value” Research Cores, and sunsetting others.*
2. Enhance biostatistical and bioinformatics support.
3. Provide uniform expert pre- and post-award support for complex grants to all investigators involved in collaborative science.
4. Provide personnel to assist with protocol development, support for assistance with IRB submissions and/or FDA communication.
5. Develop a comprehensive integrated research management system to facilitate efficient administration of research projects from start to close out in order to maximize researchers’ ability to focus on research.
   a. Explore research management software to determine what is available that would meet our needs and integrate with UVA systems. Invest in implementing this software and the training to make the most use of it.
6. Develop a unified clinical trials management system, including an infrastructure to support clinical trial budgets.
7. Enhance cross-talk between UVA OSP and grants offices at other institutions to enhance support for complex inter-institutional grant applications.
8. Provide uniform support for all computers essential for research operations.
**Initiative #4: Maximize the proportion of funds on existing grants that can be spent on research activities.**

**Desired Outcome:** In order to build our strengths we need an immediate ability to reward excellence. Increased direct investments will increase collaboration, publications, extramural funding, and patent applications. **Metric:** Increase in NIH SOM ranking by at least 5 spots at the end of the 3rd year (2017).

**Solutions:**
1. Re-examine indirect cost flows to ensure that they are appropriately utilized.
2. Reduce animal costs by 50% to levels that are comparable at peer institutions.
3. Reduce usage fees (by 25%) of “high value” research cores by increasing their funding.
4. Reduce personnel expenses on NIH grants by covering fringe benefits costs through SOM.
5. Subsidize costs for biostatistics support.
6. Provide explicit salary support for teaching or administrative activities based on actual effort.
7. Encourage creative strategies to capitalize on differentiating new technologies at UVA that are costly (e.g. pooling of resources by investigator consortiums).
8. Expand inter-institutional agreements for subsidized Research Core services.
9. Set uniform institutional policies regarding the amount of salary to be funded on grants.
10. Maximize subsidies for clinical costs when done for research.
11. Return 100% of indirect costs for all NIH funded clinical trials.

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**Initiative #5. Eliminate P&T barriers for collaborative investigators.**

**Desired Outcome:** Increased incentivization and retention of clinical investigators. Increased engagement of clinical investigators in collaborative science. **Metric:** Increased funding and publications generated by collaborative science.

**Solutions:**
1. Modify P&T criteria so that faculty who are critical for the team, but do not serve as PIs on research grants or senior authors on manuscripts, can still be rewarded by promotion and tenure.
2. Modify P&T tracks to align with research initiatives.

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**Initiative #6. Reduce redundant and unnecessary administrative requirements.**

**Desired Outcome:** Increased efficiency of the research enterprise resulting in an increase in effort dedicated to scholarly activities. **Metric:** Increased scientific output (i.e. publications, patent applications, grant applications, etc.).

**Solutions:**
1. Streamline IRB procedures including protocol development and turnaround times to align with the pace of translational/clinical research.
2. Assure necessary secretarial support in clinical and lab settings so scientists can concentrate on science.
3. Develop a central cache for all training modules, a common time when all re-training is due, and eliminate unnecessary re-training.
4. Incentivize administrative and regulatory staff to facilitate research by transparently linking their salaries and positions to indirect costs.
5. Shorten the lead time for grants processing to provide investigators with maximum grant preparation time.
6. Streamline IRB auditing procedures and establish guidelines that minimize the burden on individual PIs.
7. Re-structure administrative departments to eliminate waste.
8. Facilitate and incentivize investigator-initiated clinical trials.
9. Enhance cross-talk between the Clinical Trials office and the IRB, and eliminate redundancies.
10. Provide standardized training mechanisms for all support staff (eg. OSP, IRB, HR, accounting).
11. Promote single-agency regulatory oversight of clinical trials where feasible.

Initiative #7: Broaden our funding base beyond NIH.
Desired outcome: New partnerships with external entities on multiple levels, resulting in increased collaboration, publications, patent applications and external funding. Metric: Double non-NIH funding in 5 years.

Solutions:
1. Provide a comprehensive database of non-NIH-funding opportunities.
2. Exploit UVA Innovations to form partnerships with pharma/biotech not only to promote patentable “products”, but also scientific collaborations.
3. Identify new revenue streams (e.g. development of an undergraduate major and MS in biomedical sciences) that can supplement salaries of participants.
4. Enhance research support from the Commonwealth of Virginia by:
   a. Engaging UVA at Wise to capitalize on venture initiatives.
   b. Participating in research presentations in Richmond.
   c. Inviting elected officials to visit and see “research in action” that impacts their constituents.
   d. Partnering with biotech and academic investigators at other locations in Virginia.
5. Generate a UVA database of translatable products/devices.
6. Promote novel UVA-based technologies through technology showcase events in order to develop consortia of pharma/biotech that can act as clients for translatable products.
7. Subsidize indirect costs for private partnerships, if UVA IP can benefit.
8. Engage and educate “faculty entrepreneurs.”
9. Identify new faculty hires who have been successful in industry to help guide us in promoting industry/private sector relationships both for research and educational missions.
11. Develop organizational skill and capacity in advocacy.
12. Invite faculty from other schools to provide educational seminars for scientists on entrepreneurship, forging industry partnerships etc.
13. Support faculty who will be part-time in the private sector.

Initiative #8: Foster development of junior faculty and encourage their participation in collaborative science.
Desired Outcome: Increase in the number of junior faculty that initiate and participate in collaborative research programs. Metric: Increased number of NIH K awards and new investigators with an R01 or equivalent award. Increased number of junior faculty co-authoring publications and patent applications with senior investigators (that did not serve in a prior mentorship capacity) at UVA and other institutions. Increased number of junior investigators, without NIH new investigator status, that participate in multi-PI grants.
Solutions:
1. Develop mechanisms for providing start-up monies and interim support.
2. Provide protected research time as above.
3. Foster inclusion in research networks at early career stages.
4. Develop guidelines for establishing mentoring committees.
5. Develop career monitoring processes that align with institutional research objectives.
6. Engage team members in oversight of grant applications and in career development plans.

**Initiative #9: Maximize NIH funding.**
**Desired Outcome:** Increase NIH funding, publications, patent applications. **Metric:** Increase total NIH funding by 10% in 3 years.

Solutions:
1. Increase support for pilot grants that increase competitiveness for extramural funding.
2. Expand interim funding mechanisms to better protect outstanding research programs with lengthy track records that experience a lapse in funding.
3. Establish a pre-submission grant-review core or office (use, or hire, retired faculty to serve as internal grant reviewers) to implement voluntary pre-submission grant review panels for all investigators.
4. Enhance monitoring and dissemination of NIH RFPs for funding opportunities.
5. Invite NIH officials to UVA to educate investigators on funding opportunities.
6. Exploit RFA mechanisms for joint collaboration between intramural and extramural scientists.
7. Increase investigator awareness of funding agency policies (e.g. agencies requiring translational components versus those emphasizing basic mechanisms).
8. Participate in NIH forums where an opportunity might occur to generate an RFP.

**Initiative #10: Facilitate the implementation and successful completion of clinical trials.**
**Desired Outcome:** Increase in the number of clinical trials performed at UVA, both as the primary recruitment site and as a participant in multi-institutional trials. **Metric:** A 30% increase in the number of active protocols over the next 3 years.

Solutions:
1. Improve the speed with which clinical trials can be opened.
2. Strengthen the clinical trials infrastructure by enhancing our capacity to serve as the coordinating center for multi-center clinical trials through improved clinical trials management systems, and training and administrative support for clinical trial leadership.
3. Provide support for multi-institutional trials and trials performed at remote sites.
4. Integrate telemedicine into clinical trials.

**Initiative #11: Expand philanthropic efforts.**
**Desired outcome:** Increase external philanthropic donations to the SOM from patients, alumni and others. **Metrics:** (1) Double patient/alumni-generated philanthropic gifts in 3 years; (2) Double number of alumni reunions and number of attendees in 3 years.
Solutions:
1. Establish mechanisms whereby all SOM and hospital personnel understand the importance of research to our institutional missions and long term financial viability, and equip them with the tools necessary to communicate this to our external stakeholders.
2. Ensure that physicians and physician scientists buy into the institutional research mission and actively work to connect grateful patients and potential donors with research leaders to ensure that patients are presented with “investment/donation” opportunities that are highly competitive in the outside world.
3. Ensure that all caregivers are trained to be aware of the importance of philanthropy, both for patients and for the institution.
4. Engage the community through outreach initiatives (e.g. open houses for community members, topical “mini-med school” model for basic sciences; Lions Club meetings).
5. Promote joint philanthropy efforts with other UVA schools (e.g. Darden/McIntire, School of Engineering & Applied Sciences, School of Arts & Sciences).
6. Establish database of all SOM alumni, and pro-actively recruit them to annual reunions/homecomings.
7. Institutionalize alumni status of “fellows” (e.g. certificates) and add them to the alumni database.
8. Identify targeted funding areas that capitalize on specific donor demographics and align with institutional objectives (e.g. Women in Sciences funding initiative to support development of junior scientists and enhance the research mission).
9. Engage alumni in each electoral district.
10. Publicize research discoveries and clinical applications in the community using mailings.
11. Increase offerings of patient-payer services, e.g. consultations for the “worried well”; Executive Health Center, e.g. Boar’s Head Inn.
12. Highlight UVA SOM/Medical Center activities in each electoral district.
13. Offer “concierge” patient services to potential major donors.
14. Establish advisory boards with community members.

* Initiatives and solutions listed by ranking results from prioritization exercise. “Quick wins” are denoted in italics.