GAP Program Guide

Moving great ideas from the lab to the marketplace

2019 Proposal Handbook

FSU Research Foundation
Office of Commercialization

GAP Overview

Welcome to the Florida State University Research Foundation GAP Program. GAP was established in 2006 by the FSU Research Foundation as a funding mechanism to help FSU researchers transfer their work from the laboratory into the commercial market. GAP is a competitive process that asks FSU researchers to document the current status of one of their projects and assess what further efforts and results it would take to make that project a possible commercial success. The winners of the GAP grant will be those researchers who can most clearly identify the commercial viability of a product, process or license that they believe will come from their efforts.

We have enlisted two groups of community business experts to participate in the GAP cycle.

The first is a group of statewide business experts who will evaluate the pre-proposals submitted by FSU researchers interested in participating in the GAP process. Employing their business expertise, they will evaluate the commercial value of the work described in the pre-proposals submitted to the Office of Commercialization. A certain number of these pre-proposals will be chosen to participate in the formal GAP process.

We have also assembled a group of local business executives who sit as the GAP board to evaluate the formal GAP proposals. This group has a tremendous amount of expertise and experience in the area of business development. As a panel, this group will judge the merits of each GAP proposal based on the perceived chance to develop a commercially viable product based on current research. They will then award GAP funding based on those findings.

In this document, you will find the required elements needed to complete a GAP nomination. As you will quickly see, this is not the typical submission most researchers normally use to apply for a grant. The GAP process focuses not so much on the science of a discovery but more on the applicability of that discovery as a commercially viable entity. As you will also see, the required elements needed to apply for a GAP award are very streamlined and should not require undue time and effort on the part of the FSU researcher.

A Guide to Participating in the FSU GAP Program

The first step to participating in the GAP process is to complete a pre-proposal submission outlining your ideas for GAP funding. This pre-proposal is a short document that will be submitted to our statewide panel for review as to the possible commercial value of your work. We have included in this document both an outline of the pre- proposal as well as a sample pre-proposal.

If your pre-proposal is selected to participate in the formal GAP process, you will be asked to submit a completed GAP final proposal.

Please reference the checklist of the necessary elements to comprise a completed GAP nomination. Also, included is a schedule of events for this cycle of the GAP competition. Once the competition is completed, winners will be notified within a month and funding will be made available shortly thereafter. This will allow the winners to quickly make plans for the use of this funding.

To aid in your efforts in producing your GAP proposal, we have included for your review a complete GAP package done for a “mythical” FSU research project entitled 'Freshwater on Demand' This project has no relation in fact to any known work being done at FSU. We included this document to serve as a model for new GAP nominations showing the areas that should be covered by a researcher completing a GAP proposal. We hope that this sample GAP proposal will help you in your efforts as you participate in the GAP process.

Fall 2019 GAP – Competition Checklist

Required Elements of a GAP Nomination

1. A two-three page (max.) GAP pre-proposal

   NOTE: The pre-proposal is a two-three page (max.) executive summary. This is a new step in the application process. If accepted, you will be invited to submit a COMPLETE GAP proposal/application.

2. A complete GAP proposal, as described in the "Fresh Water on Demand" sample, including:
   a. A description of the problem to be solved
   b. Novel technology (include a solution using described technology)
   c. Potential solution
   d. Picture/diagram of the potential product (optional)
   e. Description of market (include market size, competition)
   f. Letters of interest from potential commercial partners
3. Completion of work plan
   a. Work plan and timeline
   b. Potential failure points
   c. Budget
4. Inclusion of FSU form # DSR 1 (http://www.research.fsu.edu/contractsgrants/forms.html)
5. PowerPoint Presentation (10-minute limit) Note: Presentation cannot be made to GAP Committee unless you have secured IP Protection. Please see a Licensing Manager for assistance.
6. Participate in a "practice" presentation
7. Present proposal to GAP committee

Important Dates

- Pre-proposal submission (electronic) Friday, September 13, 2019

  NOTE: The pre-proposal is a two-three page (max.) executive summary. This is a new step in the application process. If accepted, you will be invited to submit a COMPLETE GAP proposal/application.

- Approved pre-proposals announced Friday, September 27, 2019

- Final proposals due (hard copy and electronic) Friday, October 18, 2019

- Interactive review of PowerPoint Presentations Tuesday/Wednesday, October 22-23, 2019

  (Every participant will schedule a review of their PowerPoint Presentation with the GAP staff)

- Final GAP presentations to GAP committee Wednesday, November 6, 2019

- GAP winners announced Friday, December 13, 2019

FAQ

How much money can I ask for in my proposal?

GAP grants are awarded from as little as $5K to a maximum of $50K. You should only ask for the amount you need to move your work to the point where it will have the best chance of being commercially viable. Remember, GAP is a competitive program with a limited funding amount each GAP competition.

What can I use GAP funding for?

GAP funding is specifically intended to be used by the PI to advance their work to a point where an outside entity (commercial, governmental) will have an interest in helping move the idea to a point where it will have commercial value. You may use the money for most purposes to achieve that goal.

Is there anything I cannot use GAP funding for?

You may not use GAP funding to pay the PI of the project. Also, GAP funding may not be used towards tuition for any members of the PI's extended team.

The implementation plan that is included in the GAP proposal asks for phases of the project. What does that refer to?

You should break your implantation plan into phases that cover the different aspects of your plan. You need to document 1) the time you anticipate each phase will take to complete, 2) the cost of each phase, 3) how the money for each phase will be used, and 4) the outcome of each phase. The GAP committee *may* decide to partially fund your proposal by phase. Therefore, you should plan each phase carefully to insure you have the needed resources and funding needed to complete that phase of the project. If your funding is to be used for labor, you should identify the type of labor (student, graduate student, outside resource, etc.) you plan on using in that phase. You should clearly state what constitutes a completion of each phase of your plan.

What are the guidelines for the PowerPoint Presentation given to the GAP committee?

The presentation needs to be at a high level stating what problem you intend to solve with your project and what commercial value your solution might have. This means you should focus your presentation on the *value of your solution*, rather than the science of your invention. The presentation needs stay within the required time allotment (10 minutes), so that significant thought should be given to preparation of each slide of the presentation to insure the maximum amount of knowledge transfer to the committee.

The Florida State University Office of Commercialization Contacts

Program Contacts:

- Vicki Wooldridge
  Program Manager
  vwooldridge@fsu.edu
  (850) 644-9318

- Jessica Tailer
  Administrative Associate
  jtailer@fsu.edu
  (850) 645-7217

Licensing/IP Management Contacts:

- Brent Edington
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- Matthieu Dumont
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- Garrett Edmunds
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  gedmunds@fsu.edu
  (850) 645-9899

Appendix and Examples

SAMPLE
Completed Pre-Proposal Form

Name: Dr. James Olcese
Title: Professor
FSU Department: College of Medicine
E-mail: professor1@fsu.edu
Phone: 850-555-5555

1. Description of a real world problem or opportunity this research project will address:

Pre-term labor and its associated health issues are a significant problem. When an infant is born prior to a normal full-term, nine-month pregnancy, the child is at risk for a number of health issues, both long and short term, as a result of premature birth. Any solution that could completely or even partially address this issue would be a substantial benefit to society.

2. How would the proposed project address or help solve this problem?

Dr. Olcese and his research teams are working to explore the reasons why women go into premature labor. They have developed a link between the body's melatonin production and the incidence of pre-term birth. They will utilize exposure of the expectant mother to light to reduce melatonin levels and decrease the number of pre-term births.

3. What intellectual property has been developed that will help address the problem? (List IP developed at FSU that are involved in the project, issued patents, patent applications, copyrights, know-how, etc.)

4. Document your understanding of the scope of the problem as it exists today.

According to statistics released by the American Medical Association in 2012, nearly one third of 3.9 million births in the United States were classified as pre-term (more than 3 weeks before the anticipated delivery date). Of these, 10 % were over 6 weeks before the anticipated delivery date. Many of these pre-term births required various medical treatments above and beyond the treatments given to babies that had full term labors. The average cost of a neonatal ICU room in the US was $10,000 per day.

5. What would the GAP funding be used for, what is the objective or outcome of the GAP project and what is the possible timeline for that effort?

The GAP funding would be used to pay for the hardware, software and research labor needed to develop a working prototype of the eye goggles that would deliver the light therapy to pregnant women. We believe it will take between 5 and 7 months to complete this set of tasks.

6. Document your understanding of current commercial entities that would have interest in your work.

There are several companies who we believe would be interested in the results of this project. These include Merck, Pfizer and Johnson and Johnson.

7. If you are awarded a GAP grant for this work and complete that effort, what would be the next step towards commercialization of the work product?

Using the results of the GAP project we will identify potential commercial partners to further develop the technology into a commercially viable product. (insert the appropriate next steps for your particular situation)

Attaining Letters of Interest

Completed GAP proposals are expected to contain opinion letters from outside firms that help establish the viability of the FSU funded activity.

When you decide to participate, write a short description of the results that you hope to have achieved at FSU, at the end of the GAP funded year, and identify a long term commercial opportunity that would become more achievable if you succeed.

At the same time, write a letter to one or more third parties with a commercial interest in the field. Incorporate your summary proposal, and ask;

a. Are we working on the most significant current barrier to progress in this field?

b. If not, what do you believe that barrier to be?

c. With that barrier removed, would you be likely to invest in further product development?

Attached is an example letter that might have been used by Dr. Alice Jones when she decided to apply for a GAP grant to establish feasibility for her fictitious portable water purifier.

SAMPLE
Request for Letter of Interest

Mr. Daniel Coleman
Vice President of Product
Development Coleman Company LLC
(Fictitious)

Dear Mr. Coleman,

As you may remember, we met at a recent NSF commercialization review panel. My field of research at the National High Magnetic Field Laboratory involves the recovery of high value chemicals from process effluents; and I have invented a highly effective filter material that we call 'Nylon X'

My research strongly suggests that it is possible and economical to produce an easily portable, hand powered water purification unit that can convert seawater to potable water.

I've asked my University to fund a project for one year that will establish:

1. Filtration rates and filter media configuration for a range of contaminants and contaminant concentrations
2. The pressure required to achieve target throughput and purity
3. At least one mechanical assembly and hand powered pressure mechanism consistent with these goals.

If you were beginning this project in your own labs, and planned to spend no more than $100K would you have other or different initial goals and priorities?

If we are successful in meeting our goals, would you feel justified in using our technology to produce a Coleman product for your market?

Thank you for considering our questions. We believe there is a mutual benefit in our efforts.

Alice Jones, PhD.

SAMPLE
GAP Proposal (Fictional)

GAP Proposal

"Fresh Water on Demand"

Dr. Alice Jones College

of Engineering Florida

State University

November 7, 2008

Florida State University
Division of Sponsored Research
PROPOSAL TRANSMTTAL FORM

Shaded areas are reserved. See form instructions at http://www.research.fsu.edu/contractsgrants/forms.html

PROPOSAL IDENTIFIERS:	SRA Log #	OMNI ID's:

1. Select administering business unit: ☐ **FSU01** (FSU Sponsored Research) ☐ **FSRF1** (FSU Research Foundation)

DEADLINE INFORMATION

2. Is there a sponsor deadline? ☐ Yes ☐ No

If yes, Sponsor Deadline: Date: Time: Time Zone: ☐ Electronic or ☐ Paper ; ☐ Postmark or ☐ Receipt

3. Response to Solicitation #:	Solicitation URL:

4. If there is no sponsor deadline, PI's requested submission/completion date:

5. Proposal Contact (if different from PI) Fill in contact information below:

Contact Name:	PHONE #:	EMAIL:

6. PRINCIPAL INVESTIGATOR INFORMATION See page 3 for additional investigators and approvals.

PI NAME:	PHONE #:	EMAIL:

PROPOSAL INFORMATION

7. SPONSOR:	Sponsor ID	
8. FEDERAL FLOW-THRU: ☐ Yes ☐ No. If Yes, Federal agency where funds originated:	Sponsor ID	CFDA

9. PROPOSAL TITLE (as submitted to sponsor):

10. PROPOSAL TYPE: ☐ New ☐ Continuation ☐ Renewal ☐ Supplement ☐ Revision

11. PROJECT DATES: Start: _____ End: _____

12. PROJECT LOCATION: ☐ On-Campus (non-NHMFL) ☐ Off-Campus (non-NHMFL) ☐ NHMFL (On-Campus) ☐ NHMFL (Off-Campus)
Off-Campus Performance Site: _____

13. F&A INFORMATION: Rate: _____ **%** Base: ☐ MD ☐ TD ☐ N/A ☐ SLFR	If F&A Rate proposed is less than the Federally-negotiated rate, is the reduction mandated by sponsor's written policy or voluntarily waived by FSU? ☐ Mandated ☐ Voluntary

14. PROJECT PURPOSE: ☐ Research _____ ☐ Other Sponsored Activity_____ ☐ Instruction_____.

SRA Use Only					
	☐ FONRE	☐ FONIN	☐ FONOS	☐ FMAG	
	☐ ONRES	☐ ONINS	☐ ONOSA	☐ ONMAG	
	☐ OFRES	☐ OFINS	☐ OFOSA	☐ OFMAG	☐ MAG (Core)

PROPOSED COSTS

15. Total Requested from Sponsor	$	Attach detailed budgets for all proposed costs.	
16. Total FSU Cost Sharing	$	☐ Voluntary ☐ Required by Sponsor	Attach FSU C/S Commitment Form & detailed budget.
17. Total Third-Party Match	$	Attach Third-Party C/S Commitment Form & detailed budget.	

18. PROJECT DEPARTMENT: Identify the dept. responsible for financial management of the project if awarded. This DeptID will be used in the budget chartfield combination.	**Dept Name:**	**DeptID:**

19. REPORTING CREDIT AND INDIRECT COST DISTRIBUTION BY DEPARTMENT: This data is used for institutional reporting purposes and distribution of F&A. Allocate credit using whole numbers only. Sum of credit distribution must equal 100%. This is a required field even if it duplicates the department named in block 18.

Dept Name:	Credit DeptID:	Distribution: **%**
Dept Name:	Credit DeptID:	Distribution: **%**
Dept Name:	Credit DeptID:	Distribution: **%**
Dept Name:	Credit DeptID:	Distribution: **%**
Dept Name:	Credit DeptID:	Distribution: **%**

MISCELLANEOUS INFORMATION

20. Non-Faculty Support: This data is collected for department use. Identify the total number of the following personnel supported by this grant (numbers should be based on headcount, not FTE):

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Total # Undergraduate Students:					
Total # Graduate Students:					
Total # Postdoctoral Associates:					
Total # Non-Students/Non-Ranked Faculty					

CERTIFICATIONS

Do any of the following apply to this project? Please provide attachments when applicable:	
21. Vertebrate Animals Protocol # Attach ASU Form	☐ Yes ☐ No
22. Human Subjects	☐ Yes ☐ No
23. [reserved; leave blank]	
24. DNA/RNA Use	☐ Yes ☐ No
25. Radioactive Materials	☐ Yes ☐ No
26. Hazardous Chemicals	☐ Yes ☐ No
27. Select Agents	☐ Yes ☐ No
28. Nanomaterials	☐ Yes ☐ No
29. Marine Lab (SRA will send a copy of proposal to the Director of the FSUCML.)	☐ Yes ☐ No
30. Compressed Air Diving (ADP) (SRA will send a copy of proposal to the Chair of the Dive Control Board & the ADP Coordinator.)	☐ Yes ☐ No
31. Dual Compensation	☐ Yes ☐ No
32. Workshops/Conferences	☐ Yes ☐ No
33. If 32 is Yes, will fees be collected?	☐ Yes ☐ No
34. If 33 is Yes, is the dept collecting the fees a Certified Cash Handling Site?	☐ Yes ☐ No
35. If 32 is Yes, will Continuing Education Units (CEU's) be issued?	☐ Yes ☐ No

36. Are Subcontract(s) and/or consultant(s) proposed? ☐ Yes ☐ No.
If yes, is more than 50% of the award being subcontracted out? ☐ Yes ☐ No.
If yes and they are named, please provide budget, scope of work and letter of commitment from each, as applicable.

37. Will income, other than payments from the sponsor, be generated as a result of this project? (aka, Program Income such as registration fees, sales of products, etc.) ☐ Yes ☐ No

38. Is this project is continuation of a previous project? If yes, enter Project ID: Awd% ☐ Yes ☐ No

39. Will additional resources such as animal or non-animal space, equipment, utility service, etc., be needed to conduct this project in addition to what is currently available to you or is budgeted for this in the proposal? If yes, complete the following: ☐ Yes ☐ No

Resource Requested: _____ Estimated Cost: _____.
Requested From: _____ Request Approved: _____.

40. Will NHMFL facilities be used to conduct any part of this project? ☐ Yes ☐ No

41. MATRICULATION and/or TUITION FEE WAIVERS: (CHECK ONLY ONE) Waiver 1 is the default if no grad salary charged.

☐ **WAIVER 1**	☐ **WAIVER 2**	☐ **WAIVER 3**	☐ **WAIVER 4**
(1) Charge the project all matriculation fees for qualifying graduate assistants and out-of-state tuition for Eng majors paid from project funds**; (2)** No qualifying grad students proposed; or **(3)** Grad student salaries not allowed.	The College/ School Waiver Allocation will cover all tuition of students paid or supported by this proposed project.	An alternate source will cover all tuition of students paid or supported by this project. The dept is responsible for processing departmental billings to pay tuition for all students paid from this project. If the dept does not process a departmental billing, the tuition will be charged automatically to the waiver allocation of the College/School associated with the student's	This Contract/Grant will pay **only** the matriculation fee for graduate assistants, even if engineering majors are paid from this project.

42. KEYWORDS

Enter as many as desired, but at least one is required:
View Proposal Keywords at: http://www.research.fsu.edu/contractsgrants/documents/keywords.xls.
If desired keyword is not on list, you may enter suggested additions.

42. KEYWORDS

The PI is aware that a participating faculty, staff, student, or partnering entity has an actual, potential, or perceived conflict of interest as described in FSU's Conflict of Interest Policy. If "Yes" is checked, review and follow the applicable conflict of interest disclosure procedure to disclose the conflict. ☐ Yes ☐ No

"Investigator" means the principal investigator, co-principal investigators, and any other person who is responsible for the design, conduct or reporting of the research or educational activities funded or proposed for funding by the applicable funding agencies. Investigators may include subrecipient investigators, contractors, consultants, collaborators, undergraduate and graduate students, and post-docs. A list of non-PHS agencies who have adopted PHS regulations can be found at http://nrc59.nas.edu/pub/fcoi_agencies_phs_regs.html.

Each signer below certifies that:

- He/she has reviewed this proposal and approves of this activity;
- Cost sharing funds, if required, will be made available when the project is funded;
- Office, laboratory, or any other space including non-animal space or space for animals, if appropriate, particularly associated with this project is available; and
- He/she has read and understood FSU's Investigator Financial Disclosure policy and FSU's Conflict of Interest policy and all required disclosures have been made.
- If this proposal is requesting funding directly or indirectly from the National Institutes of Health (NIH), he/she has read and understood the NIH Public Access Policy and agrees to comply with its requirements.

44. INVESTIGATOR APPROVALS

This data is collected for department use. Allocate credit using **whole** numbers. Each investigator must receive a minimum of 1% credit. Sum of all allocations must equal 100%. This information is not intended for allocation of credit for institutional reporting purposes or indirect cost distribution (see Block 19). Use the Proposal Transmittal Form Continuation Page if needed.

	ROLE	INVESTIGATOR NAME	EMPLID	Appointed as Post Doc or Grad Student?	CREDIT Min 1%	INVESTIGATOR Signature	DATE
Line 1	PI (from pg 1)			☐ PD or ☐ GS	%		
Line 2	Co-PI			☐ PD or ☐ GS	%		
Line 3	Co-PI			☐ PD or ☐ GS	%		
Line 4	Co-PI			☐ PD or ☐ GS	%		
Line 5	Co-PI			☐ PD or ☐ GS	%		

45. EFFORT COMMITMENTS

This proposal ☐ Does **or** ☐ Does Not **contain effort commitments by Key Personnel. See the *Effort Commitment Policy* at** http://www.research.fsu.edu/media/1463/policy-7a-9.docx.

46. CHAIR and DEAN APPROVALS for above investigators:

Approvals for Lines in Block 45	CHAIR SIGNATURE	DATE	DEAN SIGNATURE	DATE
Line 1				
Line 2				
Line 3				
Line 4				
Line 5				

47. ADDITIONAL NAMED FACULTY APPROVALS

If this proposal names individual FSU faculty who will contribute to this project but are not identified as the PI or a Co-PI, list those individuals here and obtain their signature along with the signatures of their chair and dean. These faculty members will not receive any reporting credit for this project. Use the Proposal Transmittal Form Continuation Page if needed.

		INVESTIGATOR		CHAIR		DEAN	
NAMED FACULTY	DEPT NAME	SIGNATURE	Date	SIGNATURE	Date	SIGNATURE	Date

1. FOR SRA INTERNAL USE ONLY	APPROVED FOR VPR (Initials/Date):	NSF Code: NSF_____	Type of Research: ☐ Basic ☐ Applied ☐ Development

48. SBIR/STTR ATTRIBUTE:
☐ SBIR I (Small Business Innovation Research I) ☐ SBIR II (Small Business Innovation Research II)
☐ STTR I (Small Business Technology Transfer I) ☐ STTR II (Small Business Technology Transfer II)

49. OMNI PROPOSAL RESOURCES & POST-AWARD PROJECT TEAM

The PI and Co-PI's listed on page 3, and other users listed below will be added to Proposal Resources for read-only access to the OMNI Proposal record.

If the proposal is awarded, the Project Team will be set up as follows:

Project Spending Authority for non-travel transactions:

- ***PI*** will automatically have expenditure authority for all non-travel financial transactions.
- ***Co-PIs*** will not have expenditure authority on the Project unless specifically authorized below.
- ***SP Managers with ePRO*** means the user will have expenditure authority for all non-travel financial transactions, including the ability to approve requisitions in OMNI.
- ***SP Managers w/o ePRO*** means the user will have expenditure authority for all non-travel financial transactions, except the ability to approve requisitions in OMNI.
- ***Dept Rep*** means the user will have no post-award expenditure authority. Users with this role on the Proposal will only have access to view proposal information.

Project Spending Authority for travel transactions:

- Only one user is allowed to approve travel for a project. The PI will be made the default travel approver unless an alternate is listed below. Note that the Project Travel Approver cannot approve his/her own travel transactions. The travel approver role is "Project Manger" which is different from a "Sponsored Project Manger (SP Manager)."

Co-PIs with Spending Authority:	EMPLID	EMPLID	EMPLID

***SP Managers with ePRO* authority**:

NAME	EMPLID	NAME	EMPLID

***SP Managers w/o ePRO* authority**:

NAME	EMPLID	NAME	EMPLID

Project Manager (Travel Approver):

NAME	EMPLID

***Dept Rep*:**

NAME	EMPLID	NAME	EMPLID

50. POST AWARD NOTIFICATIONS

***Project Setup Notifications* (Optional)**: Identify people to be notified (by SRAS) when project is set up or modified, in addition to the PI and Contact shown at top of page 1:

Name	Email Address

Milestone Notifications (Optional): Identify people to be included on report due-date reminder emails (milestone notifications), in addition to the PI shown at top of first page:

Name	Email Address

Fresh Water on Demand

THE PROBLEM

It has been said by many that water will be the new oil. As the population of the world continues to grow the demand for fresh clean water will grow as well. This demand will come at a time when the supply of quality fresh water will be under increased decline due to many factors. The first will be from the increase in usage for irrigation needed for agriculture. The second factor that will affect supply will be from the effects of climate change. As the earth continues to warm the amount of fresh water at the earth's surface will continue to shrink. The third and potentially largest factor on fresh water supply continues to be the increase in the pollution level being introduced into the supply. Over the past hundred years the world's supply of unpolluted surface fresh water has been reduced by more than 50%. All in all, the supply picture for usable fresh water in the future is not a pretty one.

Many have predicted that the lack of available water will lead to famine, social and political unrest and even to possible war. So it is clear that any scientific breakthroughs that will increase freshwater availability will be embraced by society.

POTENTIAL SOLUTION

In our lab we have developed and now patented (FSU Patent Application # 17809235) a synthetic fiber call *Nylon-X that* has some very interesting and unique characteristics. Its fibers are extremely dense and can be used to filter out most if not all microscopic particles from a liquid. The fibers also have the ability to conduct an electrical charge. This can be used to attract or deflect particles that also have electrical charges associated with them. During our work on the amino acid solutions we did an experiment where we applied an electrical charge to a small patch of Nylon-X and used it as a filter. We then pumped an amino acid solution under a small amount of pressure through it. The results were quite remarkable as the purity, which resulted, was extremely high. We then tested the Nylon-X filter with salt water and found the resulting liquid to be pure freshwater. We feel that with the decreased availability of fresh water, our Nylon-X could help to provide us with more fresh water given its ability to purify water.

Novel Technology

Our lab at Florida State has been doing research in the filtration of liquids. Mainly our work has been directed at being able to remove impurities in different chemical compounds that exist in a liquid state thus making those compounds more effective. We have developed many different methods of filtration including using electromagnetic fields, the use of new manmade synthetic fibers and the use of temperature and pressure. In our most recent work we have been using a combination of these forces to try and increase the purity level of amino acids that exist in a saline solution for the bioengineering field.

As part of our process we routinely clean the entire filtration system with pure water, effectively putting water in place of the solution (in this case the amino acid solution) and run it through the process. We expect the final product in this cleaning exercise to be pure fresh water. One of our research assistants was performing this cleaning procedure when he noticed he had mistakenly substituted a saline solution (essentially seawater) for the pure

water that is required for the cleaning process. Just for research sake he looked to see what the resulting liquid solution would be. To our complete surprise we discovered that it was pure water! Our system was able to take seawater and only using our filter, a very small electric charge and a small amount of pressure we were able to make pure water. We were very excited about these results and the possible commercialization opportunities that might exist for products using this technology.

THE MARKET

FSU's technology has the potential to become a major factor in the world-wide water desalination market. Potable water is a scare commodity in many developing countries. Increasing population and environmental pollution is making clean water scare in developed nations as well. An inexpensive, compact device such as that being developed in our lab could gain a significant share of this billion dollar market.

The report, *Study: Water Desalination Worldwide for Sea Water and Brackish Water 2006-2010-2015 found* that 'The market for water desalination has witnessed a significant upturn during the last years. Driven by the increasing world population and the diminishing freshwater sources, a result of global warming, desertation and environment destruction, many countries in the world have constructed or are constructing water desalination plants for water supply. Meanwhile the technological innovations have been largely raising the energy efficiency of the desalination process and reducing the running costs, which are always the key concern for the large-scale water desalination. Especially, the innovations in energy utilization, such as solar energy and terrestrial heat, the advances of nanotechnology and molecular technologies have been elevating the outcome efficiency so largely that the desalination is really becoming a realistic solution for the water shortage in many parts of the world. The market volume has been soaring from $ 2.5 bn in 2002 to $ 3.8 bn in 2005 with a growth rate over 15% per annum. These figures are only plant and equipment but not the whole value chain. The market figures for the whole market, you will find in the study. It is predicted that this fast development is going to last and even accelerate for at least the next ten years. The market worldwide is to reach nearly $ 30 bn up to 2015. Dramatic increase is expected in Asia mainly China, in new technologies and small systems applications.

Divided by regions, the Middle East still takes over 50% of the market share, followed by Asia-Pacific, where economic boom, urbanization, population growth and environment deterioration make the municipalities and industrials eager to search for new water sources. These two regions are going to remain the leading forces for the global markets. America and Europe share about 10% of the market respectively. The construction there is mainly for the purpose of reducing the use of groundwater or adding alternative water sources."[1] The market for on-demand fresh water in small quantities will continue to grow as well. This growth will come from several areas. Recreational use will include the camping and boating industry which today utilizes chemical water purification as the chief method for making potable water out of non-potable water. A second major market will be the ability to provide an inexpensive and mobile water purification method for drinking and cooking water in the

[1] http://www.hkc22.com/waterdesal ination.htm l

third-world countries that don't currently have access to clean water sources provided in mass.

POTENTIAL COMMERCIALIZATION PARTNERS

IDE Technologies, Ltd is a joint venture between Israel Chemicals Limited and Delek Group Ltd. IDE has a $100 million contract to build a desalination plant in Australia, with construction to begin this year.

In 2005, the company, along with Veolia Environment and Dankner-Ellem, built the world's largest desalination plant in Ashkelon, Israel, capable of delivering up to 6% of Israel's water needs. In 2006, less than a year after initial production, it won Desalination Plant of the Year at the Global Water Awards.[2]

Additionally, General Electric Co. (GE) has expressed interest in this technology. As part of its WaterExplorer Project, GE is committed to improving the world's drinking water. We have provided GE management with our research materials and received positive feedback. We anticipate that GE

Furthermore, Coleman Company, LLC and the American Red Cross have expressed interest in using this technology. All of these companies have submitted letters of support for this technology.

PROPOSED USE OF GAP FUNDING

We propose to construct a working prototype of a one gallon "fresh water on demand" device utilizing the "Nylon X" technology described above. This effort will take approximately one year to complete. We have constructed an implementation plan attached to this document that details the proposed funding requirements to complete this development. We have broken the implementation plan into four phases. Each phase contains a verifiable objective. This objective is basically a critical point in each phase that if we don't successfully reach, the rest of the project cannot be achieved. Once we have successfully completed the entire prototype effort we will be at point where we can go forward to seek a commercial partner who can help us bring this technology into the market as a viable product.

[2] http://www.greenchipstocks.com/articles/desalination-companies-stocks/ l95

Fresh Water on Demand

Professional Biography

Dr. Alice Jones College

of Engineering

Florida State University

November 7, 2008

Dr. Alice Jones is currently an associate professor in the College of Engineering at the Florida State University. Dr. Jones earned her doctoral degree in 1999 from the University of Texas at Austin in the Materials Science and Engineering Department. She came to FSU in 2003 from the College of Engineering at the Georgia Institute of Technology where she worked as a post-doc with Dr. Herman Smith. Dr. Smith is a world renowned expert in filtration systems and has many patents to his credit. Her postdoctoral work focused on materials science and the development of different kinds of porous membranes. During her time at Georgia Tech Dr. Jones conducted research into a new filtration device using a variation of a nylon fiber system. When Dr. Jones arrived at FSU she continued her work on the nylon product and was awarded a patent in 2005 for Nylon X. Dr. Jones currently runs her lab on the FSU campus and has multiple contracts with clients such as the Department of Defense, The Florida Fish and Wildlife Agency, The Nature Conservancy and several for profit companies doing research in the liquid purification area.

Dr. Jones has several patents to her credit dealing with filtration systems and has been published in many of the journals that deal with the subject. Below are a few of the publications Dr. Jones has published in her career:

I. Jones,A, Xu Y, Wong-Staal F. Identification and purification of cellular proteins that specifically interact with the RNA constitutive transport elements from retrovirus D. Virology 1997 228:333-339.
2. Jones,A, Gaietta GM, Fischer WH, Ellisman MH, Wong-Staal F. A cellular cofactor for the constitutive transport element of type D retrovirus. Science 1997 276:1412-1415.
3. Reddy TR, Jones, A, Li X, Wong-Staal F. Functional interaction of the HTLV-1 transactivator Tax with activating transcription factor-4 (ATF4). Oncogene 1997 14:2785-2792.
4. Li J,* Jones,A,* Mullen TM, Westberg C, Reddy TR, Rose DW, Wong-Staal F. A role for RNA helicase A in post-transcriptional regulation of HIV type I.Proc Natl Acad Sci USA 1999 96:709-714.
5. Jones,A, McDonald D, Middlesworth T, Hope TJ, Wong-Staal F. The carboxyl terminus of RNA helicase A contains a bidirectional nuclear transport domain. Mol Cell Biol 1999 19:3540-3450.
6. Reddy TR, Xu W, Mau JK, Goodwin CD, Suhasini M, Jones,A, Frimpong K, Rose DW, Wong• Staal F. Inhibition of HIV replication by dominant negative mutants of Sam68, a functional homolog of HIV-I Rev. Nature Med 1999 5:635--042.
7. Jones,A, Kuhen KL, Wong-Staal F. Lentivirus replication and regulation. Annu Rev Genet 1999 33:133-170.
8. Westberg C, Yang JP, Jones,A, Reddy TR, Wong-Staal F. A novel shuttle protein binds to RNA helicase A and activates the retroviral constitutive transpm1element. J Biol Chem 2000 275:21396-21401.
9. Jones,A, Wong-Staal F. Specific interaction between RNA helicase A and Tap, two cellular proteins that bind to the constitutive transport element of type D retrovirus. J Biol Chem 2000 275:32694-32700.
I0. Reddy TR,* Jones,A,* Xu W, Wong-Staal F. Sam68, RNA helicase A and Tap cooperate in the post-transcriptional regulation of human immunodeficiency virus and type D retroviral mRNA. Oncogene 2000 19:3570-3575.
11. Yang JP, Jones,A, Reddy TR, Wong-Staal F. Mapping the functional domains of HAP95, a protein that binds RNA helicase A and activates the constitutive transport element of type D retroviruses. J Biol Chem 2001 276:30694-30600.
12. Kuwabara T, Warashina M, Sano M, Jones,A, Wong-Staal F, Munekata E, Taira K. Recognition of engineered tRNAs with an extended 3' end by Exportin-t (Xpo-t) and transport of tRNA• attached ribozymes to the cytoplasm in somatic cells. Biomacromolecules 2001 2:1229-1242.

Fresh Water on Demand

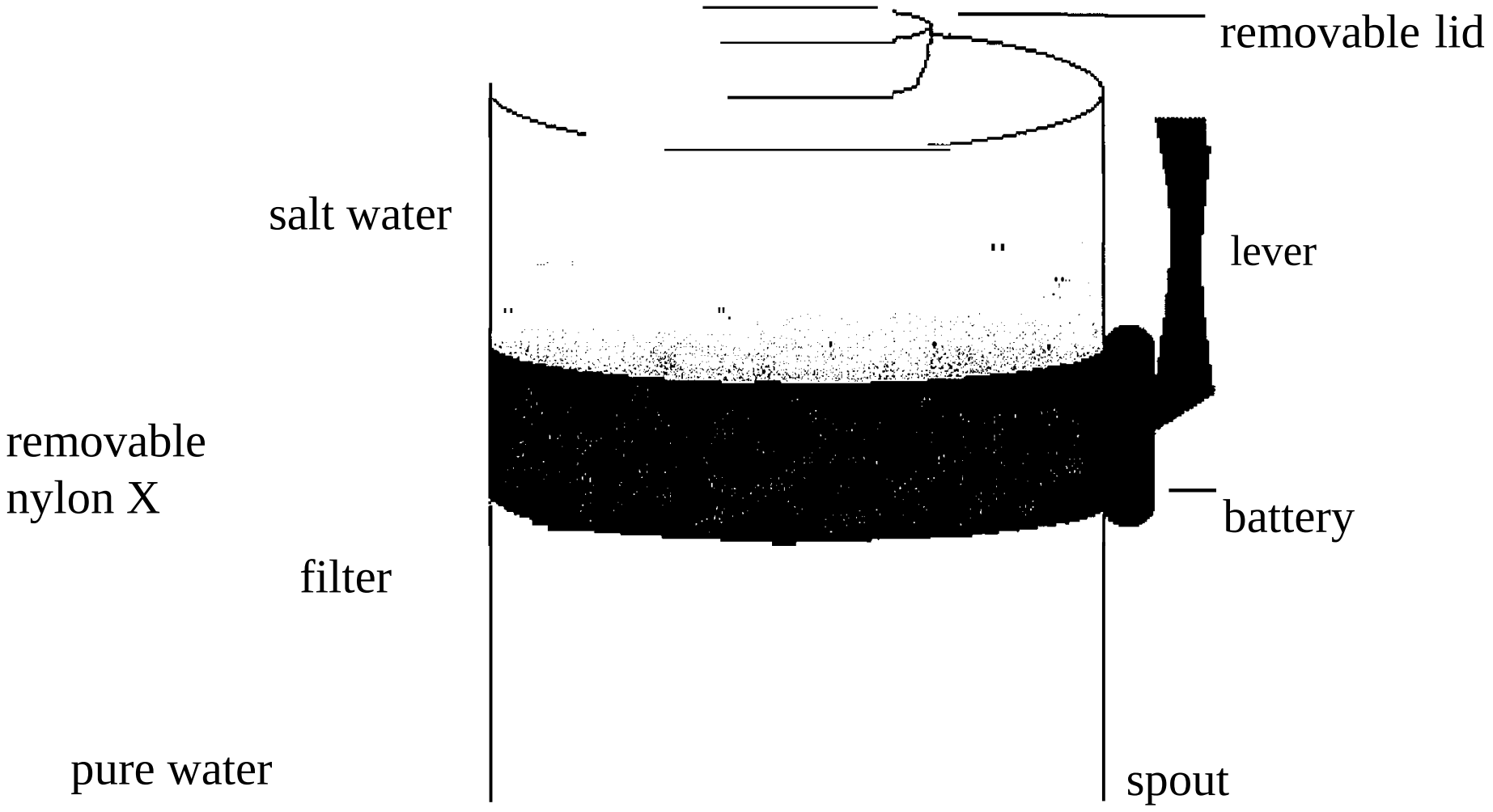
Pictures and Diagrams of Potential Product

Dr. Alice Jones College

of Engineering

Florida State University

November 7, 2008


removable lid
salt water
lever
removable
nylon X
battery
filter
pure water
spout

Fresh Water on Demand

Cost and Activities Plan

Dr. Alice Jones College

of Engineering

Florida State University

November 7, 2008

Phased Implementation Plan

Phase 1

Timetable: January 1 - March 30
Objective: To design and build a cylinder that can handle a pressure load equal to 4 times atmospheric pressure. This cylinder would hold I gallon of saltwater as well.
Required funding for Phase 1: $11,750
Failure point: Cylinder unable to maintain 4 atmospheres of pressure

If successful, proceed to Phase 2.

Phase 2

Timetable: April 1 - June 30
Objective: To design and build a removable Nylon X filter that will be used in the cylinder built in Phase 1. The filter must be able to successfully filter I gallon of saltwater into freshwater.
Required funding for phase 2: $14,750
Failure point: The filter clogs or fails under 4 atmospheres of pressure.

If successful, proceed to Phase 3.

Phase 3

Timetable: July 1 - September 30
Objective: To design and implement a small power supply that will attach to the Nylon X filter built in phase 2. This power supply will need to be battery driven and able to last over 30 gallons of purification.
Required funding for Phase 3: $11,750
Failure point: The power connection or duration does not meet basic needs.

If successful, proceed to Phase 4.

Phase 4

Timetable: October 1 - December 31
Objective: Final field-testing of completed prototype. The unit will be subjected to different elements (heat, humidity etc.) to ensure its successful use in these elements.
Required funding for phase 4: $11,750

If successful, move to find construction partner.

Fresh Water on Demand

Supporting Letters of Interest

Dr. Alice Jones College

of Engineering

Florida State University

November 7, 2008

The Outdoor Company - (Mythical)

March 15, 2007

Alice Jones, Ph.D.
Director, High-Performance Materials Institute (HPMI)
1115 West Call Street
Tallahassee, FL 32306

Dr. Jones,

This is our letter of support for your GAP Proposal to the Florida State University Research Foundation.

The Coleman Company, LLC is firmly committed to supporting your efforts in creating a new water purification device. We believe that your efforts in developing a new filter made out of Nylon-x will prove to be invaluable to our outdoor customers. Coleman is very interested in the prototype you are developing and its progress.

Coleman Company, LLC has almost 100 years' experience with producing and supplying their customers with outdoor products. These products are designed to enhance people's outdoor experiences, as well as give them some of the conveniences of home. We feel that this technology will allow our customers the surety that the water they will be using is clean and doesn't contain any impurities.

Based on the opportunities this new product will provide for our company, we are willing to enter into an agreement with the Florida State University Research Foundation once the prototype has been proven.

We look forward to being of service to you in your endeavors to commercialize this product.

Sincerely,
Daniel Coleman
Vice President of Product Development

(Fictional)

March 15, 2007

Alice Jones, Ph.D.
Director, High-Performance Materials Institute (HPMI)
1115 West Call Street
Tallahassee, FL 32306

Dr. Jones,

This is a letter showing that GE is very interested in the product you are developing using the revolutionary filter made out of Nylon-X.

GE is currently working on helping to solve the water scarcity problem with our WaterExplorer project. We are currently establishing efforts for homes and businesses to practice more conservative water usage, as well as helping to install desalination plants around the world so that we can use the oceans to our advantage. Furthermore, we have developed technologies that will help turn wastewater into a renewable resource. We feel that the filter made with Nylon-x will help us to further these efforts in solving the water scarcity problems of the world.

We are committed to furthering water purification techniques, thus we are interested in your technology. We want to fully show our support of your work with this letter because we feel that your progress will prove to be an asset to our company.

Based on the success of this technology, we would be willing to enter an agreement with the Florida State University Research Foundation. We look forward to working with you, Dr. Jones, in the future.

Sincerely,
Jeff R. Garwood
President and CEO of GE Water & Process Technologies

American Green Cross (fictional)

March 15, 2007

Alice Jones, Ph.D.
Director, High-Performance Materials Institute (HPMI)
1115 West Call Street
Tallahassee, FL 32306

Dr. Jones,

This letter is to show our support for Dr. Jones' work in developing a water purification device using a filter made out of Nylon-X.

The Red Cross is completely in support of Dr. Jones efforts in developing a handheld device for water purification. We would find this immensely useful for our disaster relief personnel because clean water is difficult to come by in a third world country, let alone after a natural disaster. Moreover, we would also be able to supply them to the people in third world countries who so desperately need them. This technology would help us to aid much of the world with its clean water problems.

The Red Cross has over l00 years of experience as the nation's premier emergency response organization. As part of a worldwide movement that offers neutral humanitarian care to the victims of war, the American Red Cross distinguishes itself by also aiding victims of devastating natural disasters. Over the years, the organization has expanded its services, always with the aim of preventing and relieving suffering.

Based on the success of this technology we feel that it will help us in our endeavors, and we would be willing to enter into an agreement with the Florida State University Research Foundation.

Sincerely,

Betsy Ross
President
American Green Cross

Dr. Alice Jones,

I enjoyed meeting you and discussing your research at the International Water Technology Conference last year.

IDE has a continuing interest in the Nylon-X materials under development in your lab. The possibility of furthering our understanding of water desalination and purification is important.

It does appear that there is the possibility of producing an improved method of procuring potable water through this study. This is a process that is of the highest interest to IDE.

The prospect of using the fundamental understanding that this program will develop together with the development of a cost-effective product, which you indicate is now a possibility represents an important step forward in the difficult business of providing clean water.

Please keep us informed of your progress. I look forward to hearing that you have been successful in obtaining additional support and hope to further our collaboration in the future.

IDE Management (Fictional)

Fresh Water on Demand

PowerPoint Presentation Slides

Dr. Alice Jones College

of Engineering

Florida State University

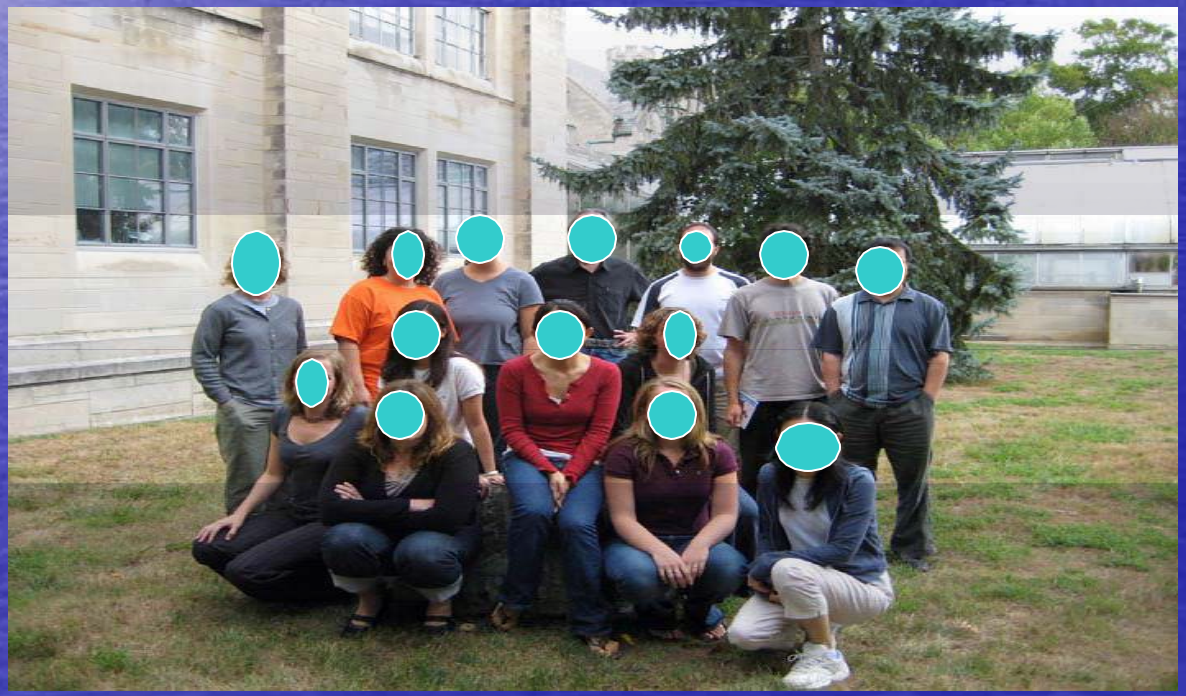
November 7, 2008

Water on Demand

Dr. Alice Jones

The Jones Lab

Focus on developing high density synthetic fiber technology



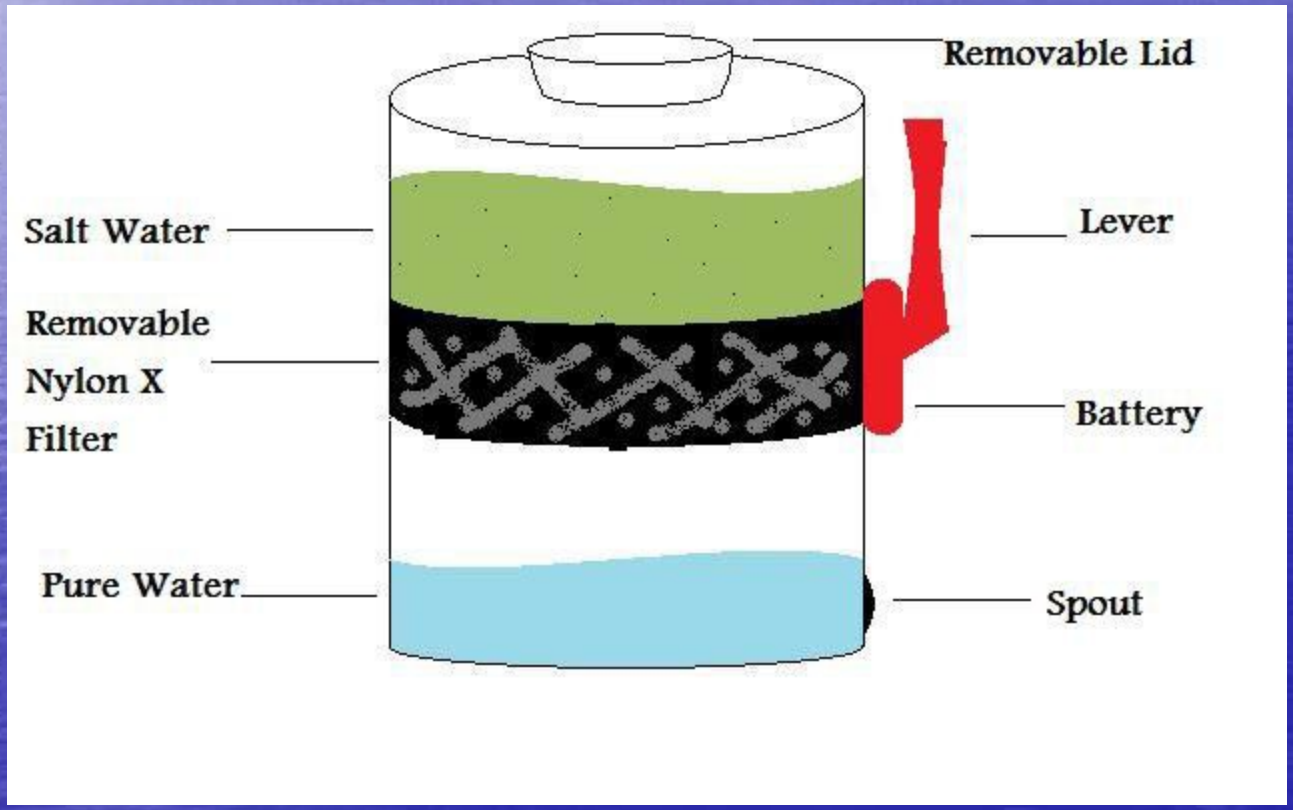
The World Needs Potable Water

- Over the past 100 years, the world's potable water supply has decreased by 50%
- As the Earth continues to warm, the amount of fresh water decreases

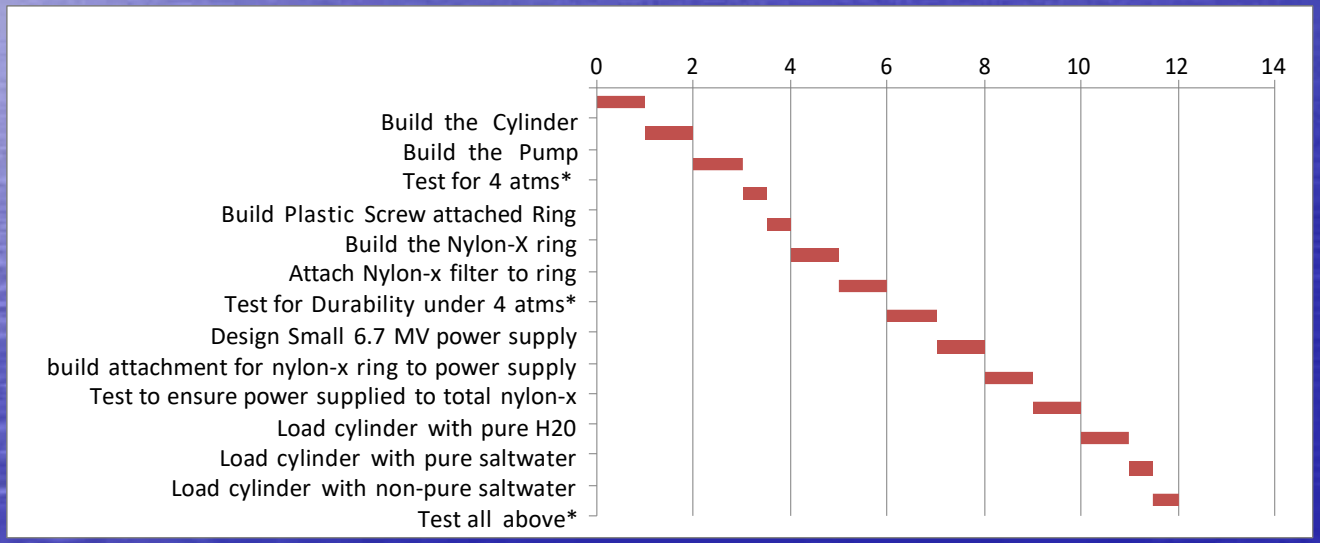
Nylon-X

- Synthetic fiber with unique filtering power
- Electrical charge capability
- Tested and proven to remove 100% or salt from seawater
- Florida State University Patent Filed

Nylon X
Portable Water Filtration Device



Business Plan



Market Information

- The worldwide water desalination market volume soared from $2.5 billion in 2002 to $3.8 billion in 2005
- 15% increase per year expected over the next ten years