***DC Metro Science for the People:***

***Continuing our Legacy in the 21st Century!***

**Chaired by David Schwartzman**

**Introduction:**  DC Metro Science for the People has been active since 2005. Our organization includes researchers, engineers, teachers, students, service providers and community members engaged in analyzing, teaching and applying basic scientific principles for the common good. We focus on how scientific discoveries are made and utilized by our society: Who benefits? Who does not, and why? In this panel we will discuss our history and present a survey of our group and members' activities and research. Reading List:

[www.dcmetroSFTP.org](http://www.dcmetrosftp.org/), [www.solarUtopia.org](http://www.solarutopia.org/), [www.redandgreen.org](http://www.redandgreen.org/)

**brief description of some of the projects and activities of our group**, including but not limited to

* Science classes in the summer school program at Bancroft Elementary School. Our projects included setting up and maintaining a worm farm for the Bancroft Garden and for community gardens in Mt. Pleasant. We also monitored pollution in various parts of Mt. Pleasant using a pollution measuring device, and looking at the growth of lichen in our neighborhood as an indication of pollution. We had a mock student council hearing, which included a debate and vote on some proposed laws. We also invited local leaders to share their experiences about how laws are passed by lawmakers in our city.
* Our Criminal Justice Project was instituted to learn and share with concerned residents of the community what a person’s rights are when accused of drug related activities (possession…), whether, when and how to challenge the validity of the evidence of illegal drugs.
* Street Theater: Dr. Strangelove Sequel (when Edward Teller was speaking at the Watergate).
* Films in local parks, public places (e.g., “Flow,” “Heir to an Execution”)
* Forum with students at Howard University on “Air Pollution and Asthma in DC”
* Roundtable at Catholic University (DC Social Forum) concerning DC’s mandatory HPV vaccine

**Panel Speakers**:

**Joanne Fleming** will discuss the links between science and community activism in describing a local struggle to save McMillan Park, which is an historic landmark in the District of Columbia. Its sand filtration site was the first water treatment facility in DC, operating from 1905 to 1986, providing pure drinking water without chemicals. The grounds were used by residents for recreational and sleeping purposes owing to the cool breezes during hot summers. McMillan Park was the first racially integrated park in DC. In spite of all this history still preserved in the filtration silos and underground tunnels, DC government is now planning to destroy this historic site with an economic development plan that would  replace it with office buildings and luxury housing. These plans have been vigorously opposed by the surrounding community for several decades. Now there are several detailed proposals for truly green development, preserving the history and enhancing it with a variety of services to the community.  Local groups including Ecolocity and Empower DC, which included some of the members of DC Metro Science for the People, have been involved in this struggle. For more information: <http://friendsofmcmillan.org/>

**John Tharakan: Appropriate Technology and Social Justice: What can get us where**

This presentation will focus on appropriate technology (AT) and it’s intersection with the goal of social justice. We will discuss the concepts of Appropriate Technology, what it means in terms of technology and our goal of a just global social order. Social justice will be defined using a survival ethics framework for community flourishing and well being.

Despite vast advances in technology, there remain significant portions of the population of our planet, that lack access to such basic needs as clean air and water, shelter, sanitary and safe environments, education, healthcare, information and communication services that the average citizen of a developed nation takes for granted as basic and fundamental in terms of his or her human rights. The drive to realize social justice would be when we could say that for all humans on this planet, that those basic foundational needs had been met..

We are far from there. We are at a place where we need to continue to question and interrogate technology, to question its suitability to address the enormous number and variety of pressing human needs across borders and communities that leave so many in poverty, eking out a living on less than a couple of dollars a day. Our goal must be a conceptualization of technology as appropriate only if it empowers communities those technologies impact. Our technology education, research, and development, must reflect the paradigm of appropriate technology rooted in the understanding that technology rights for all humans are as critical as other basic rights, including civil and human rights.  [http://www.appropriatetech.net](http://www.appropriatetech.net/).

**Jane Zara: How to Combat the Expropriation, Appropriation and Privatization of Biological Resources?**

This talk will include a **brief overview of various instruments used for expropriation, appropriation and privatization of biological resources**, including how national and multi-national corporations have had undue influence on international instruments, national and municipal legislation and regulation. (The following text is a background primer for my talk).

**What conditions had fostered the conversion from public to private funding for scientific research?** Various factors have fostered the conversion of scientific research from public to private funding. The flood of speculative investment in the 1990s generated a biotech bubble. Venture capital investments were $10 million in 1975; they were $4.5 billion by 1983. (increase of 25,000 %). Federal funding was being drastically cut, also driving academics to commercial sources of funding, so modern biology as an academic field was replaced by biotech as a commercial enterprise.

**Big boosts in the privatization of scientific knowledge** came when commercial interest in biotechnology was sparked by the Supreme Court decision, *Diamond v. Chakrabarty* (1980), a patent case involving the privatization rights of recombinant organisms. This in turn catapulted a strong intellectual property regime, rewarding corporate research interests (e.g., recombinant insulin allowed founders of small biotech firms to become instant millionaires (Genentech)). Biotech firms were thus founded on hopes of future returns and aggressive venture capital.

In addition, the **Bayh-Dole Act** in 1980 granted universities and small businesses the right to patent products/methods arising from federally funded research. So this and Chakrabarty lead the way to use results of publicly funded research for private commercial profit - and laid the foundation for the commercial development of the biotech industry.

Privatization instruments include patenting and material transfer agreements.

**Knowledge vs. patents**

* Knowledge is a fundamentally different type of property. It doesn’t fit neatly into Locke’s private property theory.
* Knowledge for the public good is not for exclusivity, or scarcity.
* Sharing knowledge doesn’t reduce the total knowledge available.
* Intellectual property creates artificial scarcity of knowledge, and generates a commodity fiction;
* Patents drive up the prices of pharmaceuticals and diagnostics, and result in fragmentation, stifling access to research and diagnostic materials. Frances Collins warned of this.
* Myriad Law Suit – Gene fragments prevent access to breast cancer tests

Patents are issued for a vast array of biologicals, including nucleic acid sequences (e.g., genes and fragments of genes), proteins and their fragments, receptors, bacterial and mammalian cells, stem cells and transgenic organisms, among other things. Existing legislation draws little, if any, distinction between downstream inventions that lead directly to commercial products and upstream fundamental research discoveries that allow for and require further scientific investigation. The challenge we face is to distinguish discoveries that are better developed and disseminated through open access from those that occur under the protection of intellectual property rights. Proprietary trends in basic biomedical research have been encouraged by the Court of Appeals for the Federal Circuit, by further extending the Supreme Court’s “expansive approach to patent eligibility” while relaxing the stringency of standards for patent protection such as utility and non-obviousness, leading in turn to the patenting of incremental advances in upstream biomedical research.

The exclusivity of basic biological findings through patents can have a chilling effect on the open exchange of scientific ideas, where the owners of patents impose prepublication reviews, disclosure restrictions, and reach-through provisions. According to intellectual property scholars such as Rebecca Eisenberg, the patenting of upstream discoveries can hinder subsequent research by permitting owners to charge a premium for the use of discoveries that might otherwise be more cheaply available in a competitive market or in the public domain, allowing in turn for the “balkanization” of intellectual property rights. Delays in publishing scientifically validated findings of clinical significance before corresponding patents are filed can hinder access to diagnostic testing and treatment approaches. So incentives created by patent financed research promote secrecy, rather than collaborations to solve hard problems, and patent monopolies give industry an incentive to spend large amounts of money lobbying politicians to shape the direction of legislation and/or regulatory practices, rather than promoting innovative solutions to difficult problems.

Promising drug candidates for complex diseases are currently failing in preclinical or clinical trials, calling for more open and collaborative approaches to solve hard problems. And public service advocates call for improving access by requiring scientists and research institutions to put data and certain types of research tools into the public domain, or at least license them widely and nonexclusively at a reasonable fee.

Two examples of expansive biological patent claims will be provided.

**International instruments for appropriation include trade laws**: International instruments include **Trade Related Internationally Property Rights Agreement** (TRIPS) (and TRIPS plus) and the Convention on Biological Diversity. TRIPS is an international instrument guaranteeing intellectual property protection for products worldwide, ensuring monopoly returns to the biotech industry worldwide. The draconian **Trans-Pacific Partnership** is soon due for fast tracking before Congress. This proposed trade agreement seeks to significantly expand intellectual property rights and privatization enforcement mechanisms, in turn undermining reasonable access to affordable, life saving medicines. In NAFTA’s first eleven years, 42 cases and claims have emerged under Chapter 11, which gives private enforcement mechanisms for corporations trumping national and state laws. Foreign investors get a second chance to litigate the same claim if unsuccessful in a federal court. One typical example the story of Metalclad v. Mexico Toxic Waste Facility: Mexico authorized a Mexican company to operate a hazardous waste transfer station in Mexico. This was subsequently bought by a California company, which sought to expand to a toxic waste processing plant and landfill. The site was contaminated with 55,000 drums (20,000 tons) of toxic & potentially explosive waste. The region has complex hydrology, unstable soils, allows toxic waste to infiltrate subsoil and enter water sources. There was a community uproar, and the town denied the municipal permit. The corporation sued under NAFTA Chapter 11, claiming expropriation. The NAFTA panel awarded $16 million to the corporation.

The **Convention on Biological Diversity** (CBD) tries to reconcile private property with community needs – an egalitarian way to privatize control over genetic resources, which can be interpreted as encouraging commercialization and privatization of intellectual biological and genetic commons, but with mandated sharing. Many consider this as legalized theft of the third world, in keeping with the “predictable colonial practice of buying off individuals (rent-seeking bureaucrats, local elites, government officials and brokers of natural resources)”.

Corporations want indigenous knowledge and biodiversity from third world countries for shorter product development times and reduction in research costs. Corporate profits in 2005 stemming from the market for drugs based on traditional medicines were estimated at $32 billion. Examples of **Material Transfer Agreements** include Costa Rica and Merck ($1 million and undisclosed royalty, est. 5% for all products derived from the country’s plants and insects); Monsanto and Peru; Bristol Myers Squibb and Surinam; Diversa Corp and Yellowstone Nat’l Park (rights to microorganisms from our hotsprings).

**How can we combat this rampant privatization?**

 Is **compulsory licensing** a viable approach to combat monopolization by patents? Compulsory licensing authorizes a third party to make, use or sell a patented invention without the patentee’s consent. States have the power to take real and intellectual property for a public use, as long as due process occurs and a reasonable compensation is offered. The various approaches and history of successful and failed compulsory licensing endeavors in the US will be discussed, as well as some examples of compulsory licensing attempts in the international arena. It’s an uphill batlle: The US has filed more WTO TRIPS complaints than all other member countries combined. Developing countries have also faced pressure from governments attempting to discourage their use of compulsory licensing and generic drug manufacturing. The US has used economic power to threaten trade sanctions or WTO complaints against Thailand, Brazil, South Africa for manufacturing generic AIDS drugs.

**Alternatives to the patenting system** are now underway and more paradigms are under consideration. One example is the federally funded Haplotype Mapping Project which works toward cataloguing a comprehensive, publicly available database on human genetic variations. Users can access the information freely, but the improvements made must also be made publicly available. Another example is the Alliance for Cell Signaling, which maps complex biological signaling networks. Protocols and findings are publicly available and the direction of future experiments is agreed upon collaboratively, and based upon existing data. These projects provide for open collaboration and produce quality research at low costs, in contrast to the secretive, time-consuming and expensive methods imposed by the patenting system.

A prize fund for medical research is also under consideration, where large prizes for cures and vaccines for diseases such as AIDS, tuberculosis and malaria would be awarded and small prizes would be awarded to me-too drugs. This would be more efficient, more equitable and would provide strong incentives for research without the inefficiencies associated with monopolization. The Free Market Drug Act proposes increasing public funding for biomedical research by amounts approximately equal to what industry currently spends on research. This would be in addition to the funding that goes to the National Institutes of Health for developing new drugs and bringing them through the FDA approval process.

 **What other approaches can we utilize?**