You are invited to attend a workshop on

***The Comparative Genetics of Cities*:**
Towards an Integrated Methodology for Pragmatic Urban Decision-making

University College London, May 21-23, 2010

If you are receiving this invitation, you already know how important urban sustainability is for the health and welfare of future generations. Cities are where most people live and work; most innovation takes place; most pollution and wealth are generated; and most vulnerability to climate change occurs. Equitably balancing urban consumption with available resources would greatly help society meet its global sustainability goals.

Today's cities are laboratories and their leaders can be thought of as clinicians in the emerging field of urban well-being. In contrast to traditional lab scientists who dispassionately observe and describe nature from the outside, the new students of cities directly shape the phenomena they seek to understand. Furthermore, the results of these urban experiments are generally not compiled, published or compared. City managers, politicians, and residents tend to see their problems as uniquely local; they approach their challenges independently and only rarely share the lessons they learn.

To help fill this gap, we plan to bring together a select group of representatives of city and regional governments, businesses that deal in urban services and design, NGOs that work on urban issues in developing and developed countries, and academic researchers that take a comprehensive view of urban systems. This group will begin to create a methodology for *The Comparative Genetics of Cities*, an approach that assumes that if we could fully delineate all shared urban traits, we would discover patterns and pathways toward curing urban ills that currently remain hidden.

The workshop will look at new ways to collect complex city data streams, feed that information into models that help envision the future, and translate those visions into improved urban policies. By examining the experience of two contrasting cities—London and Phoenix—we will begin to explore the opportunities and challenges associated with *The Comparative Genetics of Cities*. Building on a recently-published Tyndall Centre report on the vulnerability of Greater London to climate change, and the U.S. National Science Foundation's "Decision Center for a Desert City" project about water management in cities, we will evaluate different ways to present comparative urban datasets, with a particular emphasis on the heat island effect, water supply, and transport.

Our workshop will address these key questions:
1) How can urban decision-making be transformed by new datasets and analysis tools?
2) Can cataloguing and classifying urban traits help city leaders learn from each other?
3) Which tools are most appropriate and useful for which stages of urban development?
4) How can we build multi-sector (corporate, gov't, NGO, academic) urban partnerships?

We hope you will join us

Agenda for *The Comparative Genetics of Cities* Workshop, May 21-23, 2010

The workshop will have two portions. Friday's sessions will include an expanded number of public and private sector community participants, who can collectively help identify the most critical issues faced by the people responsible for conducting urban experiments. On Saturday and Sunday a smaller group will use these inputs to shape a long-range agenda of technology and policy issues associated with monitoring, classifying, and modeling cities, in order to help officials and residents develop strategies for achieving sustainability goals.

Friday May 21: *Lessons from the Laboratory*

The first day of the workshop will be shared with a number of government and corporate leaders who are the new urban diagnosticians and clinicians, actively carrying out experiments in laboratory cities like Greater London and Metropolitan Phoenix. Input from these individuals will help assure that the topics we cover in the rest of the workshop will be pragmatic and relevant to the needs of real cities.

We will begin Friday morning with overviews of the key planning issues in London and Phoenix, highlighting the importance of cross-sector partnerships in defining and addressing practical problems associated with anticipated dramatic shifts in these cities' demographic, climatic, economic and technologic conditions. The group will assemble a list of model outputs and observations that would be most useful to practitioners trying to make real urban systems more robust and resilient to expected and unanticipated changes.

Friday afternoon, we will turn the microscope around and provide ideas from private sector, NGO, and academic experts about emerging trends and technologies that may assist or complicate urban planning efforts. The Tyndall Centre's "Engineering Cities" report on the vulnerability of Greater London to climate change and natural hazards will be considered as a template, with all participants commenting on its strengths and weaknesses. Similarly, results from the "Decision Center for a Desert City" project in Phoenix will be used to illustrate how complex scientific results can best be translated through advanced visualization and participatory engagement into forms that meet stakeholders' needs.

A breakout session during an extended coffee break will allow hands-on demonstrations of new software tools and model outputs for cities like London and Phoenix, in order to better determine where the largest gaps lie among the practical needs of city managers, the best-informed "guesses" of modelers, and the cutting edge world of technologists. The final afternoon session will wrap up with a discussion of how holes in scientific and political understanding can be plugged so that cities can reach their sustainability and hazard-reduction goals more rapidly.

Friday will end with a reception where workshop participants, city and company representatives, and additional community members can further discuss their common interests in making urban systems more responsive to their residents' and managers' current and future needs.

Saturday Morning May 22: ***Mapping the Urban Genome, from Satellites to Cell Phones***

The first technical session will focus on innovative ways to observe cities and how these can be made most useful and practical, both as inputs for models and for operational purposes. These approaches include satellite- and aircraft-based remote sensing, retrieval of cell-phone triangulation data, massive arrays of inexpensive *in situ* sensors, and in-line meters to measure all kinds of urban flows. The session will emphasize how novel data streams can be used to help describe such characteristics as the urban heat island effect, water supply, and transport. As on Friday afternoon, we will have hands-on demonstrations of some of these methods in order to assess their strongest and weakest features. One of the key foci will be on how new tools can plug the infrastructure, manpower and training gaps in cities of developing countries. Can so-called leapfrog technologies for measuring and modeling urban systems help less-developed countries avoid some of the major capital investments needed to monitor and regulate their cities? What determines whether a city can respond successfully to a major external threat like a tsunami or sea level rise?

Saturday Afternoon May 22: ***From City Genetic Profiling to Urban Diagnoses***

Our second session will pick up where the first leaves off. After addressing the kinds of observational inputs needed to characterize cities and improve model effectiveness, we can then ask how model results can be presented most innovatively to inform practical urban decisions. Parallel outputs and experience from London and Phoenix, along with other city pairs, and ultimately from larger groups of cities can demonstrate the benefits of comparative analysis for informing practical local decisions. This session will look into the utility of classification efforts like the Global City Indicators Facility, the 100 Cities urban remote sensing project, the World Bank's Urban Vulnerability Assessments, and private sector programs like IBM's Smarter Cities and Cisco's Connected Urban Development. We will also consider how regional partnerships among cities, like the Sustainable Cities Network in Metro Phoenix, can promote collective interests and raise overall progress toward sustainability goals. We will explore the question of how all such programs can best be combined to create an "Urban DNA", and how such a classification scheme can facilitate decision making.

Sunday Morning May 23: ***Scaling up from Well-run Cities to Global Well-being***

Our final session will turn to one of the most vexing aspects of sustainability—how to choose the most scalable mix of approaches that can truly make a global difference. Problem statements like the UN's Millennial Development Goals convey the daunting range of challenges that cities are being asked to address. Which of the methods we've explored over the previous two days hold the promise of accelerating progress toward balancing social, economic, and environmental opportunities, and what organizational, political, technological, behavioral, and conceptual changes are needed to increase the chances of achieving favorable long-term outcomes, both globally and regionally? We will map out a course of future cross-sector actions and associated funding opportunities that build on the interdisciplinary exchanges that the previous days' discussions have fostered.