

Palo Alto Rotary Pinion

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Editor: LYLE CONNELL

BRIAN STEEN opened the meeting and TOM GRACON led the flag salute. REBECCA GERALDI introduced two visiting Rotarians from Los Altos, Diana Neiman, President and CEO, and Crysta Krames, Director of Community Resources, both of Family & Children Services of Silicon Valley; and REBECCA's daughter, Winter Pickett. CHARLIE WEIDANZ introduced Jeffrey Peters and Sharon Yang. BRIAN thanked the introducers for bring potential new members and urged that others do the same.

AKRAM PIRACHA gave opening remarks. He noted that he has been a Rotarian for 15 years, first in Pakistan and then in Stamford, Connecticut. Coming from east to west, he said he could see the lack of connection between the two because of time differences and suggested that we should consider actions that would bring us more together, such as having one time zone, as exists in India.



BRIAN reminded that dues are due in July.

TIM WATSON described the intended Global Grant this year, which will involve developing a clean water system serving 450 families in eastern Honduras.



SALLY TOMLINSON asked members to bring their cell phones next week, fully charged, for a group experience. BRIAN thanked past president KATIE SEEDMAN for doing a great job and reported that he has given her a new job, "Collector" of President's Club contributions.



LIZ KNISS joined the President's Club, announcing that she will run for reelection her final time.

BEN THRELKELD introduced Rob Robinson, who announced that Bike Palo Alto, a free educational event encouraging safe biking, will take place on October 2.

GLORIA HOM said more homes are needed for TGIF, and also noted that China has only one time zone. REBECCA noted that the meeting on August 15 will be devoted to another Hands-On service project, assembling back packs for foster children. REBECCA called on Crysta, who thanked the club for both for the shoebox and backpack projects.

For the program, ROB LANCEFIELD introduced Professor Henry T. Greely, the Deane and Kate Johnson Professor of Law and Director of the Center for Law and the Biosciences at Stanford University. His recently published book is entitled, "The End of Sex and the Future of Human Reproduction." Professor Greely predicted that in the approaching future, in most of the world, people will not engage in sexual activity to produce babies, because they will want to take advantage of a technology called "pre-implantation genetic diagnosis," which requires use of in vitro fertilization.



Pre-implantation genetic diagnosis, or PGD, tests the genetic material of one cell at the eight-cell stage of development of the fertilized egg, and of

multiple cells about a week later. The technique has been available for the past 25 years and was applied in 8,000 births in the US in 2015. There have been two limitations: first, testing been applied to just one or two genes at a time, and second, in vitro fertilization has cost up from \$15,000 to \$100,000 per use and has involved some risk in the egg harvesting process.



The first thing that will change is that testing will be applied to the whole genome, to 6.4 billion characters for the genes in every cell, at a cost that already has been reduced to \$3,000 for full genome sequencing, and can be expected to decrease to \$1,000.

The second thing will be the use of stem cells to avoid the risk and expense of egg harvesting. An ordinary skin cell (for example) will be induced to act like an embryonic stem cell – a sperm cell or egg cell. It's likely that the IVF process in the future will use sperm cells collected as they are at present in combination with egg cells produced using stem cell technology.

These possibilities raise regulatory, ethical and political concerns that must be addressed in the ten or so years that will be needed for these procedures to be developed and the additional ten or so years that will be required for testing and qualification.

PGD will be used to test the fertilized egg for five purposes:

- To detect early onset genetic diseases that would otherwise affect 1 to 2% of infants;
- To detect the propensity for other diseases, such as the risk of breast or ovarian cancer, or of early onset Alzheimer's;
- To address cosmetic issues, such as a tendency for hair to turn white, or toward male pattern baldness;
- To evaluate, within a very limited range, indications regarding behavior, such as math ability or skills relating to certain sports (keeping in mind that we don't know much about which genes convey high intelligence or the like).
- To identify whether the resulting child will be male or female.

While PGD has great potential with regard to detecting genetic diseases, it will have much less impact in improving the overall health and aptitudes of children. It might be said that PGD could be anticipated to make children something like 10% better with regard to intelligence and physical abilities.

Notably, PGD may be available to parents for free, because it will save so much money in the health care system by greatly reducing the incidence of early onset disease.

PROGRAMS & EVENTS

July 25, Becky Sanders, Palo Alto Media Center
Mastering Smart Phone Photography - a Hands-on Practicum

August 1, Bill Guttentag, Double Oscar-winning Writer-Producer-Editor, Stanford Business School: "Hollywood & Silicon Valley - A Marriage of Love and Suspicion"