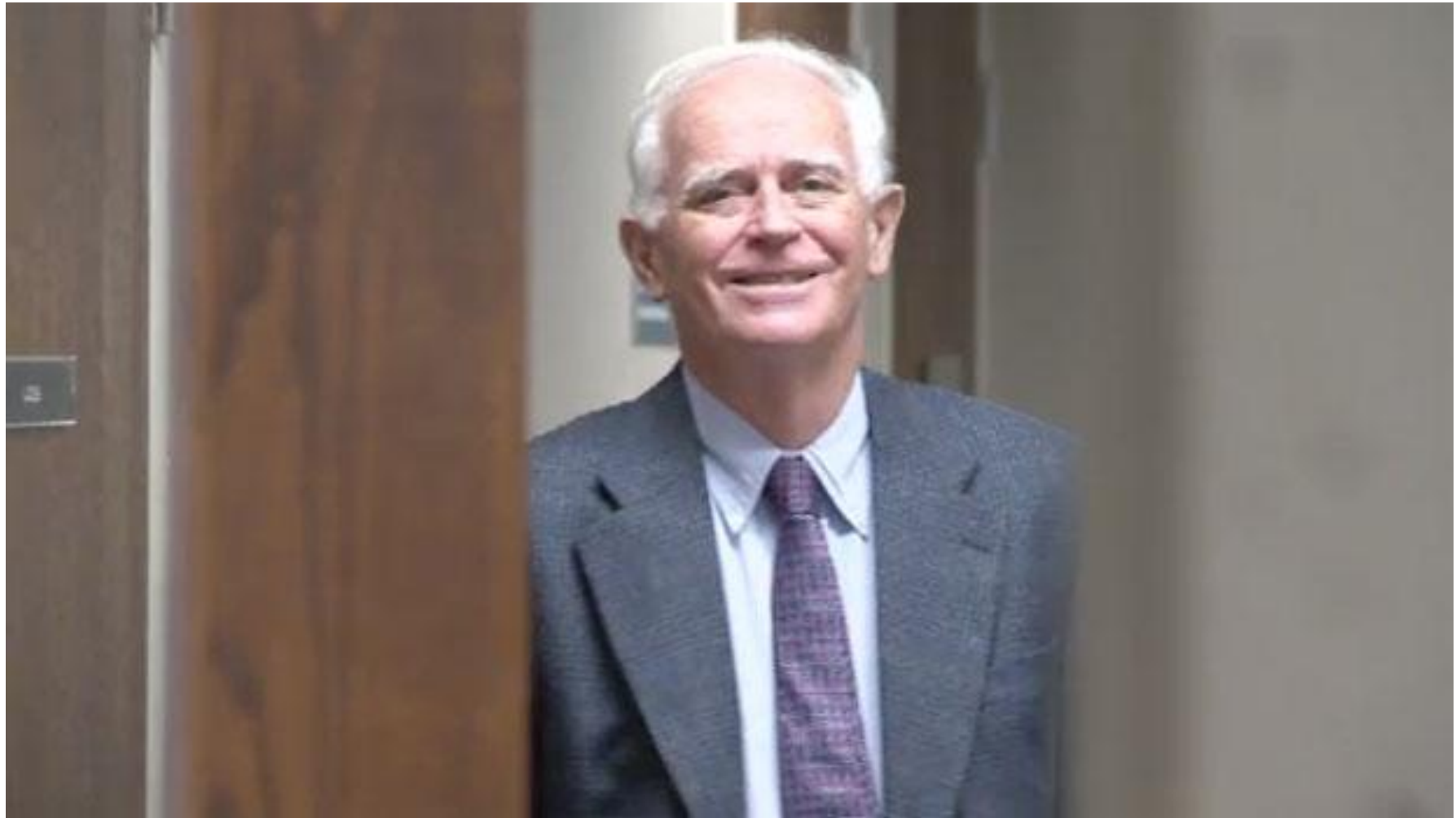


Future of kidney transplantation:

Transplant Atlantic
November 4, 2016

Tammy Keough-Ryan & Ian Alwayn





Research

- Since 2011 (5 years) over 60 published manuscripts in peer-reviewed journals
- Focus of much of this research is to look at existing practices and determine how these can be improved
 - Ischemia times
 - Matching / risks
 - Frailty
 - BK virus
 - Live donor outcomes

Future of clinical research

- Dr. Karthik Tennankore
 - Atlantic frailty in kidney transplantation project
- Dr. Amanda Miller
 - Mismatch in kidney transplantation
- Dr. Christine Dipchand
 - Live donor risks and outcomes
- **+ Atlantic collaborators!!!**

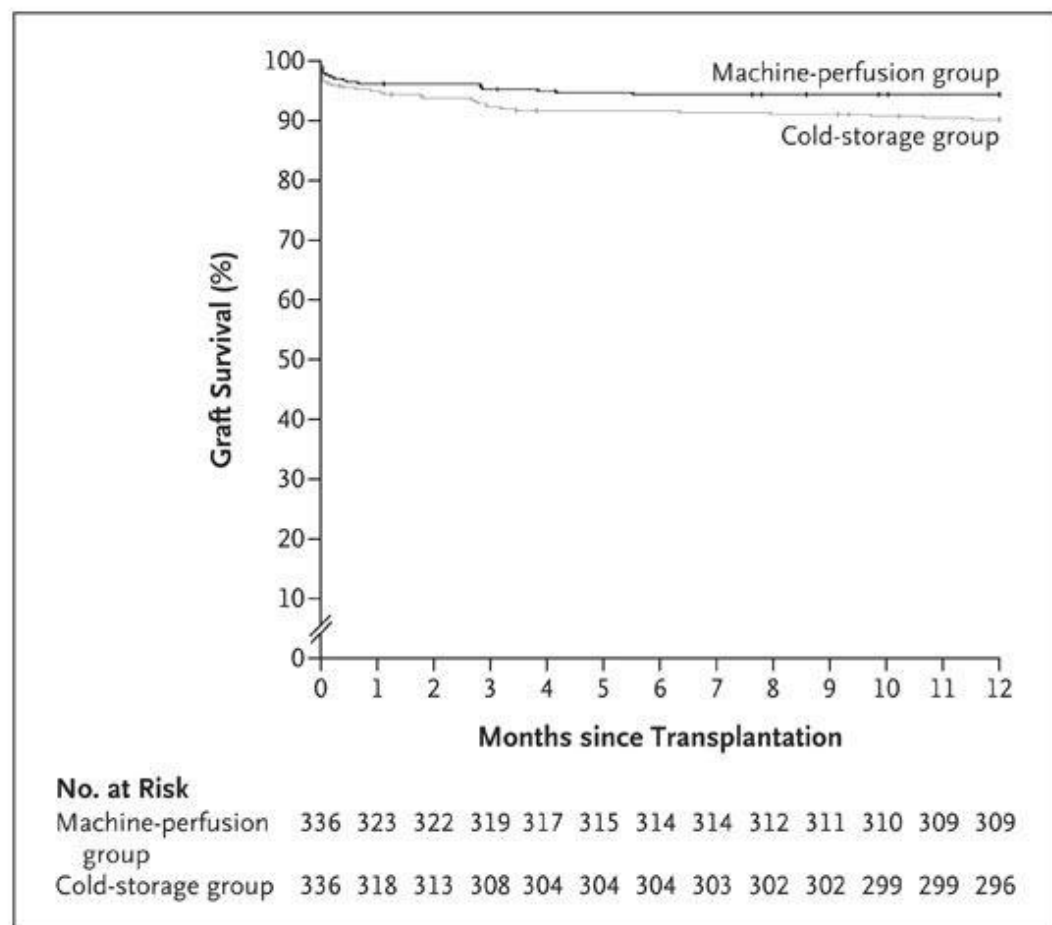
Future of clinical research

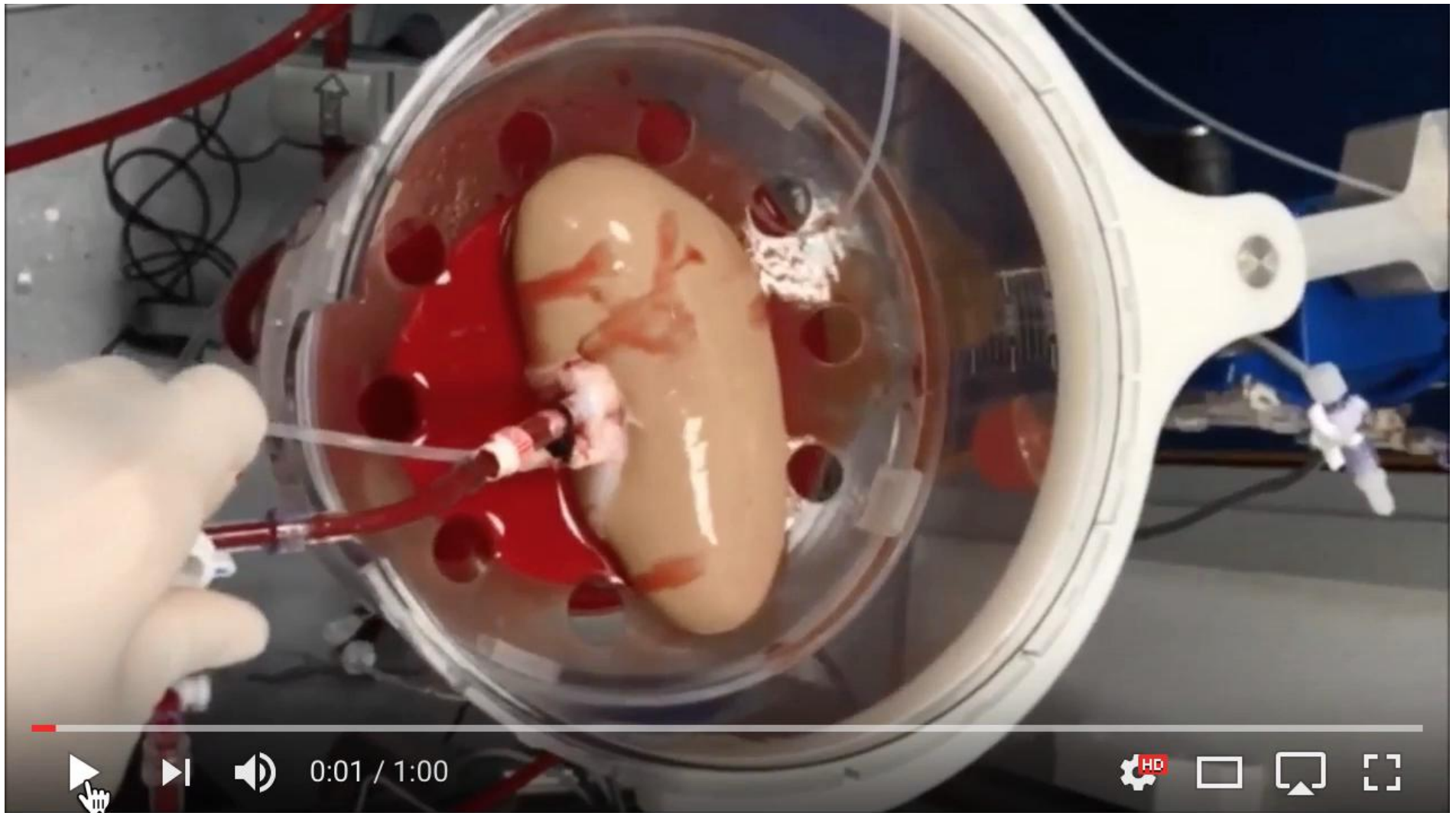
- Chris Daly
 - Director of Clinical Research
- Laura Sills & Liz Larsen
 - Research nurses & coordinators
- **+ Atlantic collaborators!!!**

Future of clinical & fundamental research

- QEII Foundation Endowed Chair in Transplantation Research
 - Supports basic science – salary/infrastructure/collaborations
 - Supports clinical science – match funding/investigator initiated research
- **+ Atlantic collaborators!!!**

Hypothermic machine perfusion: kidney





Normothermic machine perfusion: kidney

Hosgood et al. *J Transl Med* (2015) 13:329
DOI 10.1186/s12967-015-0691-x



JOURNAL OF
TRANSLATIONAL MEDICINE

RESEARCH

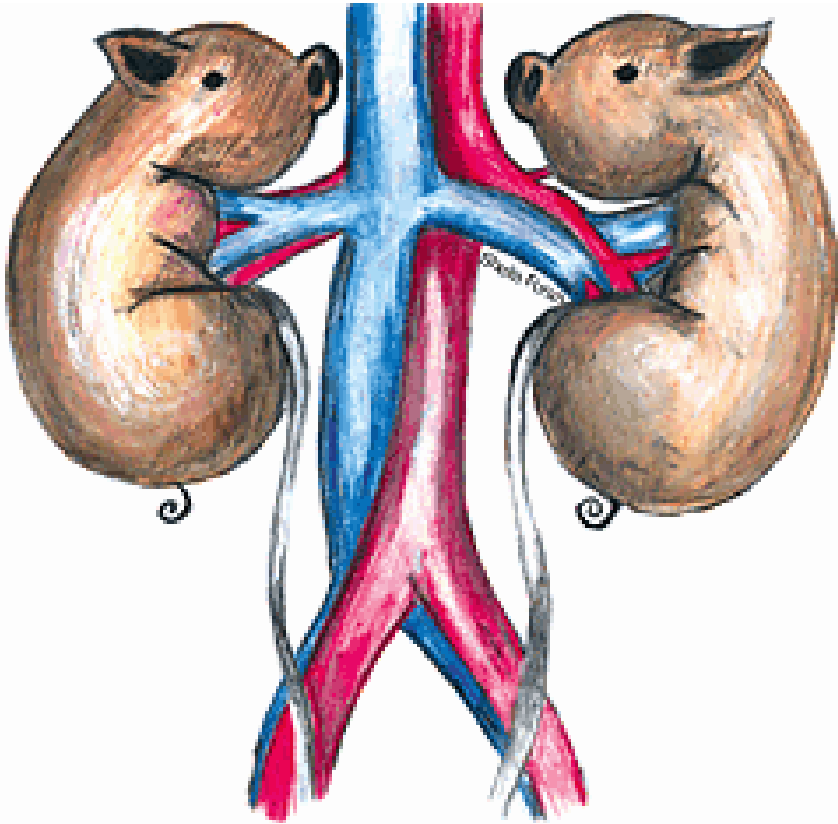
Open Access



The use of ex-vivo normothermic perfusion for the resuscitation and assessment of human kidneys discarded because of inadequate in situ perfusion

Sarah A. Hosgood^{1,2*}, A. D. Barlow^{1,2}, J. Dormer³ and M. L. Nicholson^{1,2}

Xenotransplantation: kidney



Xenotransplantation: kidney – CRISPR/Cas9

CHOICE CUTS

Researchers are looking to source an increasing variety of living tissues, including solid organs, from pigs. Many are attempting to genetically engineer the animals to reduce the risk of rejection and infection in humans.

CORNEA

Pig corneas were approved for marketing in China in April.

LUNG

A factory farm is being designed to produce 1,000 pig lungs per year.

KIDNEY

A kidney with six genetic modifications supported a baboon's life for 4 months.

HEART

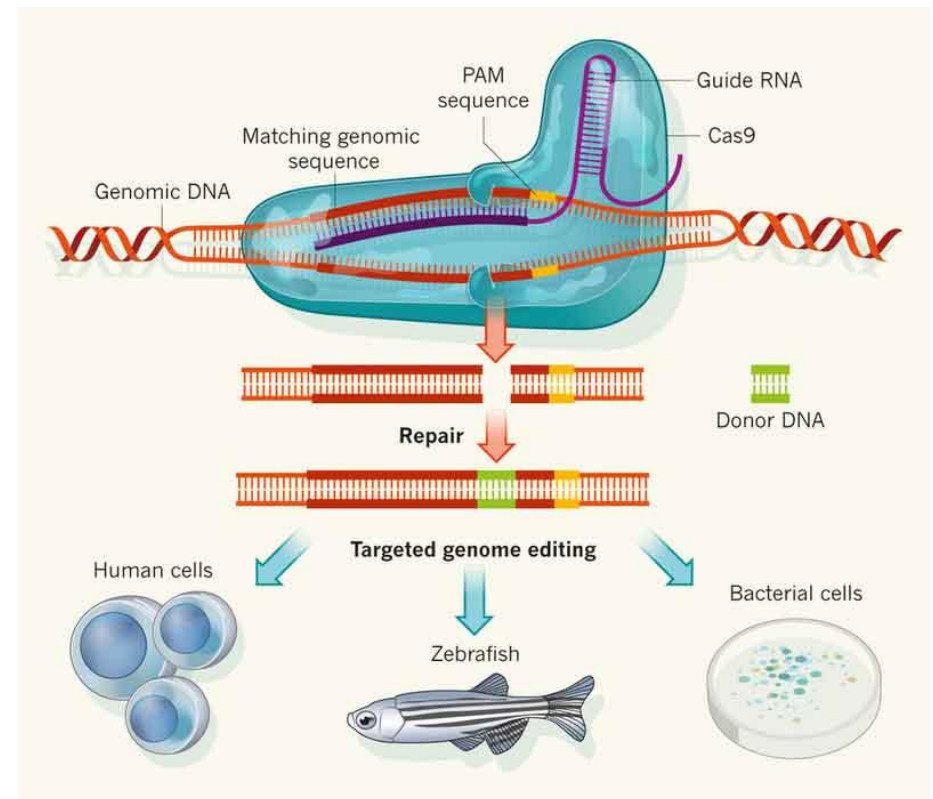
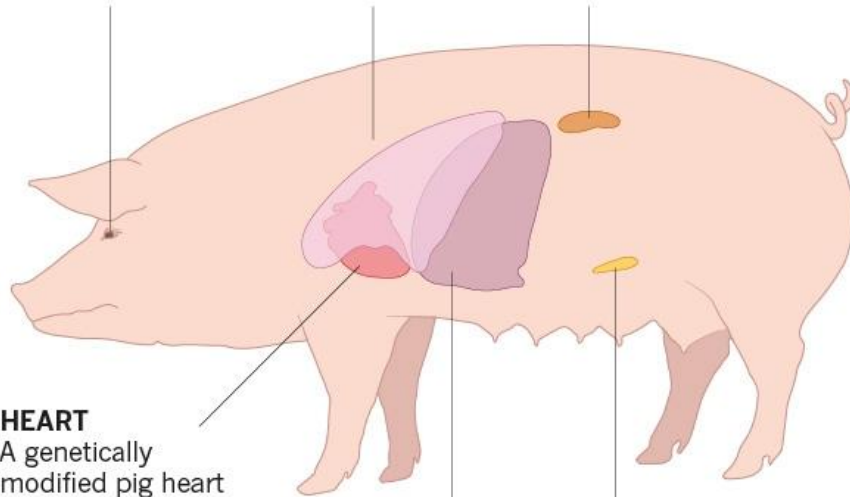
A genetically modified pig heart implanted in a baboon's abdomen survived for 2.5 years.

LIVER

Livers could be engineered to produce their own antibodies against primate immune cells.

PANCREAS

Phase III clinical trials of insulin-producing islet cells are under way.



Xenotransplantation: kidney – CRISPR/Cas9

REPORT

Genome-wide inactivation of porcine endogenous retroviruses (PERVs)

Luhan Yang^{1,2,3,*†}, Marc Güell^{1,2,3,†}, Dong Niu^{1,4,†}, Haydy George^{1,†}, Emal Lesha¹, Dennis Grishin¹, John Aach¹, Ellen Shrock¹, Weihong Xu⁶, Jürgen Poci¹, Rebeca Cortazio¹, Robert A. Wilkinson⁵, Jay A. Fishman⁵, George Church^{1,2,3,*}

+ Author Affiliations

✉*Corresponding author. E-mail: gchurch@genetics.med.harvard.edu (G.C.); luhan.yang@egenesisbio.com (L.Y.)

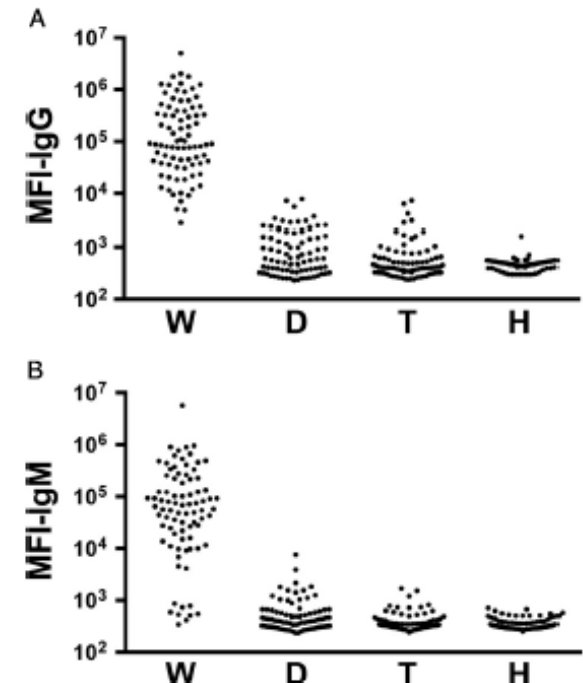
✉† These authors contributed equally to this work.

Science 27 Nov 2015:
Vol. 350, Issue 6264, pp. 1101-1104
DOI: 10.1126/science.aad1191

SHARE



0



C
Number of Human Sera with
Pig RBC MFI < Human RBC MFI
(Out of 83 Total Samples)

IgG only	0	33	49
IgM only	0	26	36
IgG & IgM	0	18	25
	W	D	T

Verbal communication:

- More genes have been edited
- Tested against kidney waitlist (Birmingham)
- About to start clinical trial..

Xenotransplantation: kidney



Administration

Multi Organ Transplant Program (MOTP)

CELEBRATING 40 YEARS
OF TRANSPLANT



528,336 (NL)

754,735 (NB)

945,824 (NS)

146,933 (PEI)



2016 Stats from <http://www.statcan.gc.ca>

Administration: loco-regional innovations??

- Amalgamation of health authorities...
- Priorities of Nova Scotian government...
- Optimizing collaborations within Atlantic region...

Administration

- Program vs. Departmental vs. Divisional
 - Co Leadership
 - Multidisciplinary
- Regional: 4 provinces, Multiple sites: *Interprovincial Sharing*
 - Understand individual organizational structures
 - Programs: Administrative Governance (DOH, ODO and Transplant, Renal programs), Clinical
 - Funding : investment variable and focus
 - Champions in each province.....site
 - ATAC: Atlantic Transplant Advisory Committee
 - Provincial renal programs
 - Transplant Voice in strategic planning

Administration

- Transplant *first* as treatment for end stage renal disease for appropriate patients
 - Messaging supported through renal programs
 - Programs strategic planning
 - Provincial, regional and national objectives aligned
 - Shared focus/targets.....Realize ,maximize

Transplantation is also the most cost-effective treatment for patients with end-stage kidney disease. **Starting in the second year after transplant, the health-care system avoids between \$33,000 and \$84,000 per transplant patient per year of dialysis.**

Administration

Transplantation is also the most cost-effective treatment for patients with end-stage kidney disease. **Starting in the second year after transplant, the health-care system avoids between \$33,000 and \$84,000 per transplant patient per year of dialysis.**



All Nova Scotians attaining optimal renal health



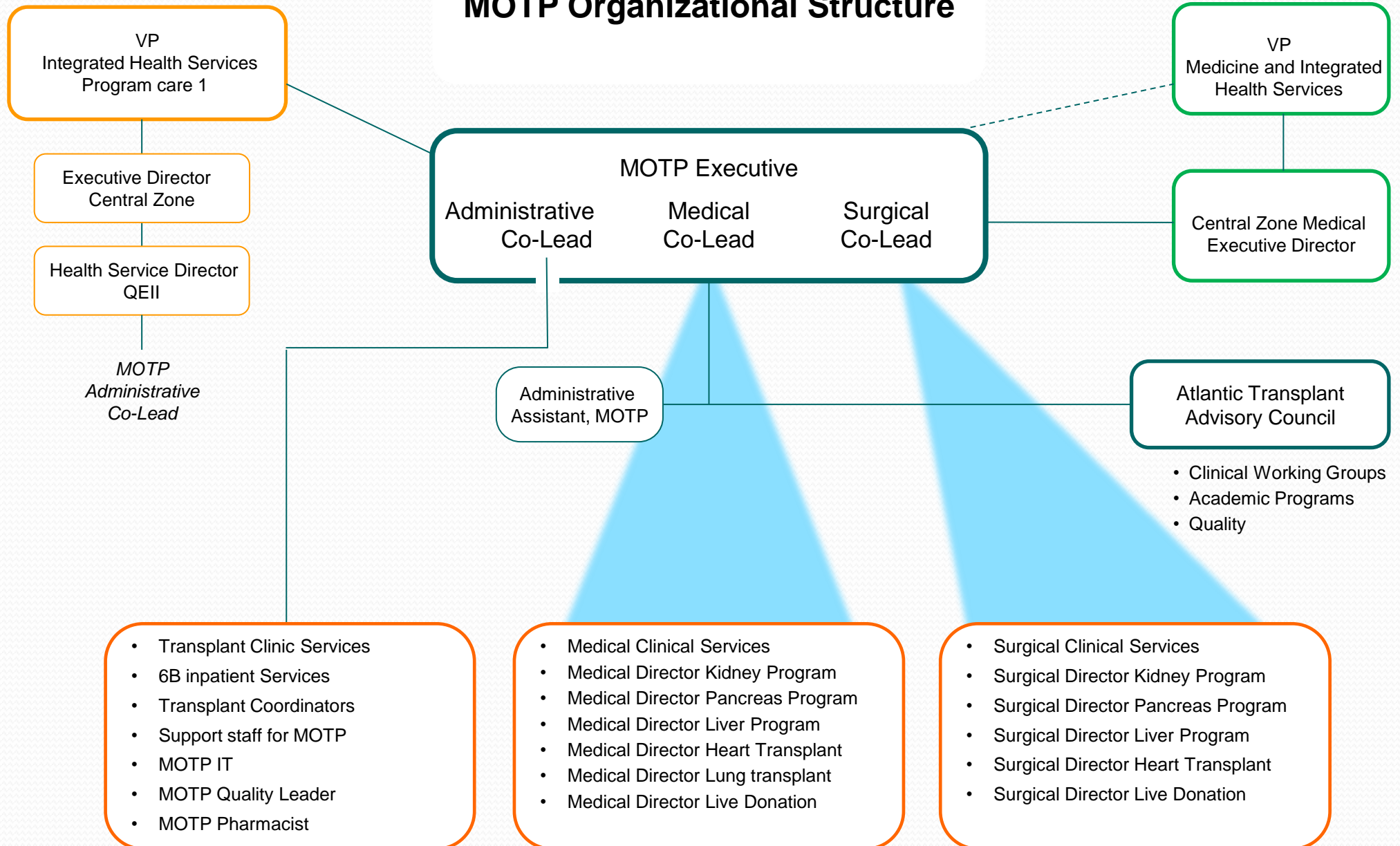
MOTP Atlantic Canada

Administration

Budgets

- Operational: *“Memorandum of Understanding”*
 - Management
 - Clinical and administrative
 - Complex donors, patients, national program
 - Satellite and central
 - Education
 - Academic program, training programs
- Medications
 - Generics
 - High cost drugs

MOTP Organizational Structure



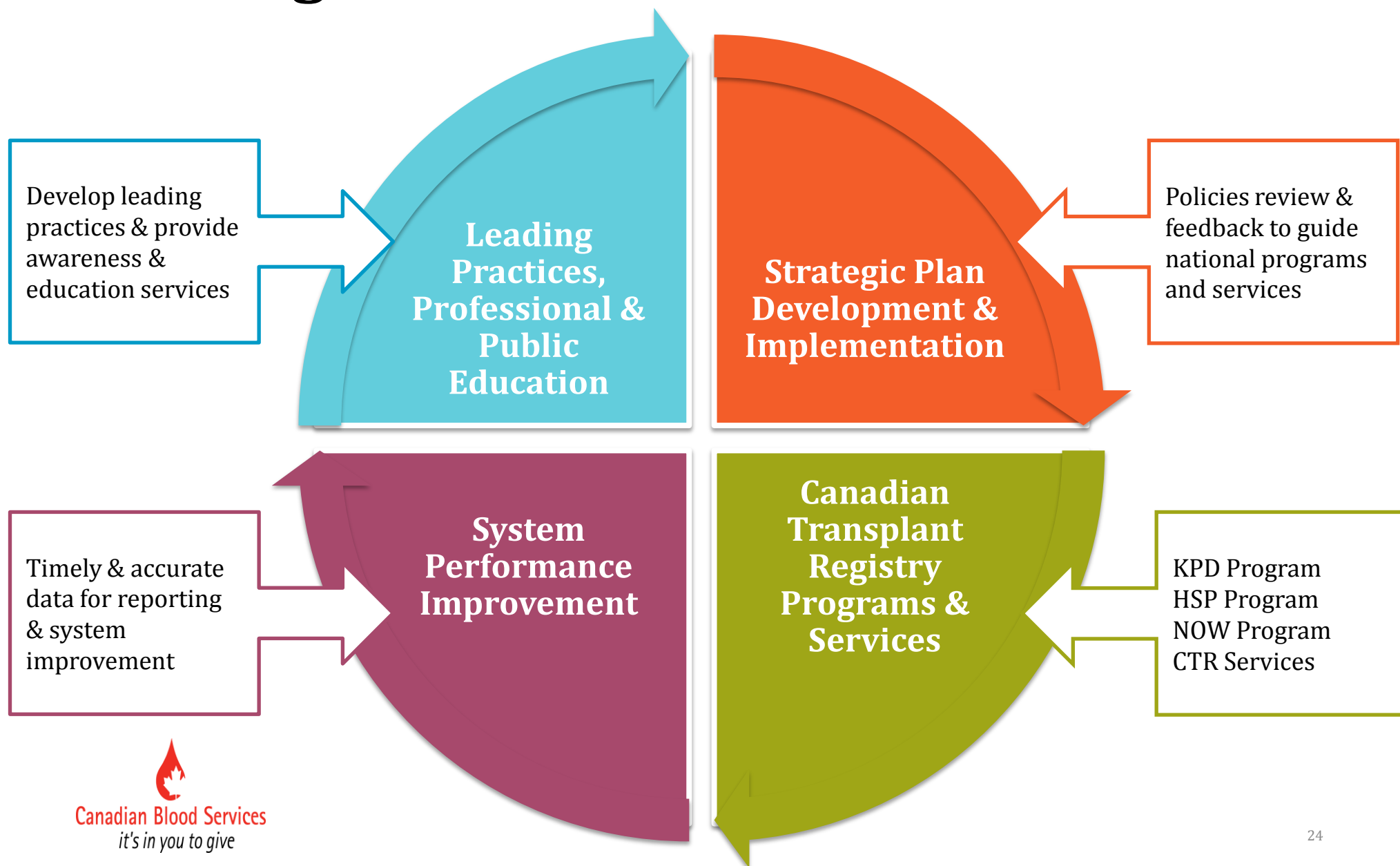
Administrative

- Renal Wait List Committee
 - Satellite sites: meetings local
 - Central site: weekly meetings: teleconference or join by Lync technology
- HLA Clinical meetings

Administration: National innovations??

- Strong representation (kidney listed)
 - KTAC
 - Drs. Keough-Ryan (NS), Gogan (NB), & Barrett (Nfld)
 - LDAC
 - Dr. Christine Dipchand
 - ODTEAC
 - Dr. Ian Alwayn
- CST Board / subcommittees

OTDT Program: Areas of Focus





Canadian Society of Transplantation Société canadienne de transplantation

LEADERSHIP IN CANADIAN TRANSPLANTATION | LEADERSHIP EN TRANSPLANTATION AU CANADA

ABOUT CST

CST GROUPS

MEETINGS & EVENTS

EDUCATION & RESOURCES

Organ Donor Surgery Course

December 1-2, 2016 in Montreal, QC

McGill University Steinberg Centre for Simulation and Interactive Learning. [More +](#)





Canadian Society of Transplantation Société canadienne de transplantation

LEADERSHIP IN CANADIAN TRANSPLANTATION | LEADERSHIP EN TRANSPLANTATION AU CANADA

ABOUT CST

CST GROUPS

MEETINGS & EVENTS

EDUCATION & RESEARCH

2017 CST-CTRMS Joint Scientific Meeting

September 26–29, 2017 in Halifax, Nova Scotia

Mark your calendar. Held in the new Convention Centre! [Read more +](#)



Summary

- Strong research track record in Halifax
- Exciting innovations in organ transplantation!
- Innovations are typically transferrable to all organs
- Administration...interesting times...
- It's all about engagement!!!

MOTP

- Opportunities to Enhance Future “Quality”
 - Clinical
 - Growth
 - Education
 - AFC Program in SOT
 - Distributive teaching
 - Research
 - Growth
 - Quality of Care
 - Administration
 - Collaboration
 - Internal and external
 - Continuum
 - Referral → Listing → Access (allocation) → Transplant → Post transplant transfer of care and follow-up (satellite and central clinics) → Outcomes

Thank you!