

Precision Kidney Clinic

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Disclosures

- Honoraria for CME (Speaker/Faculty) and Consulting: Alexion, AstraZeneca, Bayer, BI/Lilly, CPD Network, Novartis, Otsuka
- Clinical Trials: Otsuka, Amgen, Chemocentryx, Visterra
 - Site PI and Author: ADVOCATE, PEXIVAS, CLASSIC
 - Site PI: ACCOLADE
- CanVasc 2020 and 2022 author

Objectives

- To provide an overview of the Calgary GN Clinic

Case

- The year is 2012
 - 17F is diagnosed with a rare inflammatory kidney disease which was recently renamed as C3 glomerulonephritis (previously membranoproliferative GN)
 - She is very bright and has been accepted into an engineering degree
 - She asks:
 - What causes it?
 - Don't know
 - Can it be treated?
 - Treatments are non-specific and toxic
 - 50% of patients are on dialysis 10 years after diagnosis

What is glomerulonephritis?

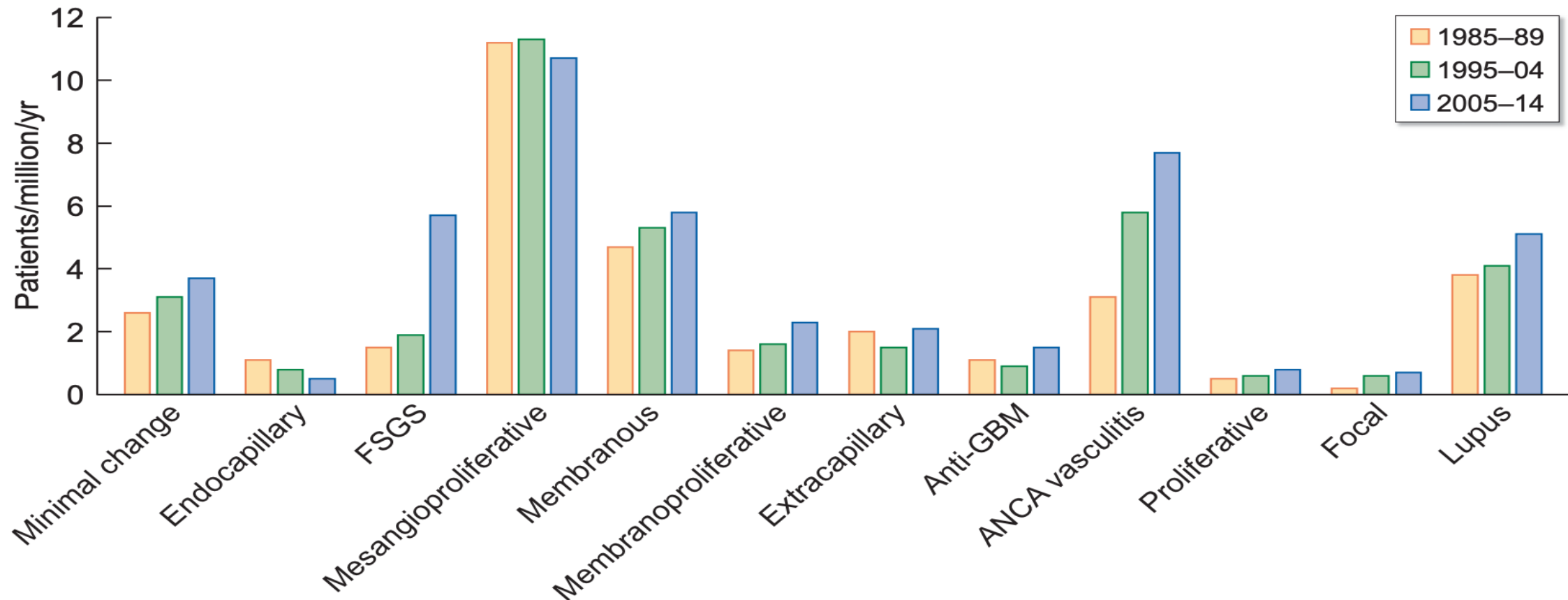
Glomerulonephritis (GN)

- An umbrella term that encompasses hundreds of inflammatory conditions which effect the filters of the kidneys (glomeruli)
 - The conditions can be “primary” meaning the cause is not clear
 - Genetic or primary autoimmune
 - They may also be “secondary” meaning that they are caused by triggers
 - Infections, Drugs, Malignancies, other systemic disease
 - The diseases may be limited to the kidneys or may be caused by systemic disorders that effect many organs, including the kidneys
 - Lupus
- These conditions often lead to progressive kidney failure resulting in the need for dialysis and or kidney transplant.
 - Kidney disease as multiple systemic consequences

What are the diseases that we treat and their incidence?

Incidence of Some GNs

C3G 1-2/million/year



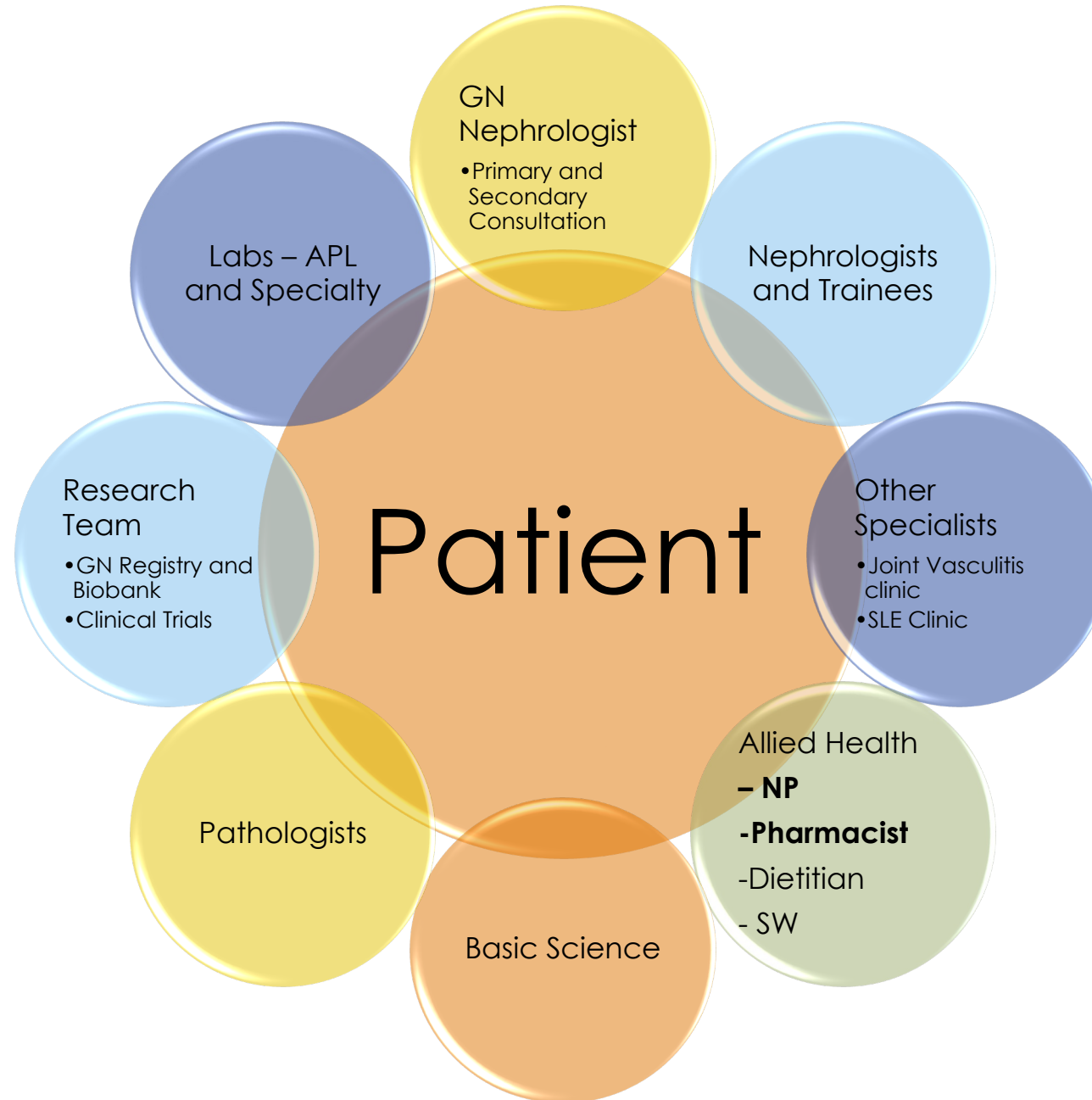
Clinic Overview

Mission Statement

- To provide excellent, comprehensive, safe and the most appropriate medical care to patients with GN at every stage of their disease process.

Current Team

- Medical Director: Louis Girard
 - 4 Nephros with GN expertise
 - Dr. Kim Cheema, Dr. Jeff Ma, Dr. Nick Li
- Nurse Practitioner (1.0 FTE dedicated position): Sumeet Dhaliwal
- Pharmacist (1.0 FTE dedicated position): Carlee Thorsen
- Unit Clerk/Admin Support (dedicated position): Ramaninder Grewal
- Research Study Coordinator – Neetu Arora
- Access to: Diabetes Nurse Clinician, Dietitian, Social Worker as required



Referral

- ▣ Patients are referred by the attending Nephrologist to the GN clinic
 - ▣ Usual Sources
 - ▣ Urgent Clinic
 - ▣ ER
 - ▣ Inpatient
 - ▣ Direct referral from a specialist

Scope of Care

- Goal
 - All patients with GN
- Current State
 - Primarily patients in their first year of therapy
 - Induction and initial maintenance
 - D/C to primary Neph once stable
 - CKD/ESRD
 - GN clinic is integrated in the CKD clinic
 - NP is CKD trained and does see dialysis patients as required
 - All Neph's are trained in dialysis
 - Transplant
 - GN Neph with expertise in transplant
 - Pregnancy
 - GN Neph with expertise in pregnancy
 - Transition from Pediatrics
 - Model of joint clinic in transplant

Roles in the GN Clinic

GN Nephrologist

- Have our own case load
- Second opinion
 - Provide formal consult/possibly a few follow-ups and then return to primary Neph
- Curbside
 - Discuss difficult cases formally or informally

Nurse Practitioner

- Autonomous and Team based roles
- Act as the case manager for the patient
- Primary contact with the patient during non-clinic times
- Follow labs for complications of immune Rx
- Assess patient during initial part of clinic visit and identify issues to be addressed
- Manage CKD relevant CV risk reduction issues
- Ensure (physician) adherence to relevant protocols; particularly prophylactic
- Study patients

Pharmacist

- Autonomous and Team based Roles
- Assume a case load of patients and participate in clinic
- Educate patients who are being initiated on immune Rx about relevant drugs and prophylaxis
- Med reconciliation and search for interactions
- Monitor for side effects
- Vaccinate and provide other injections as appropriate
- Resolve coverage issues
 - STEDT
 - Private payors
 - Compassionate
- Coordinate Day Medicine or Private infusion clinics appointments for infusions
- Provide pharmacy consultation to physicians who are not utilizing NP services

Adaptable Infrastructure

Tuberous Sclerosis Complex

- A rare genetic conditions where tubers grow in multiple different organ systems including the kidneys
- Main treatment is derived from immunosuppression
- GN Clinic expertise
 - Multidisciplinary care
 - Coordinate multi-specialist care
 - Imaging
 - Immunosuppression when indicated



The path forward

What can your DNA tell you about cannabis?

Cannabis contains 100s of different cannabinoids (e.g. THC and CBD) and terpenes (e.g. pinene and limonene).

Different strains of cannabis contain different concentrations of cannabinoids and terpenes.

When smoked, eaten, or used as a topical, these chemicals enter your body where they interact with your endocannabinoid system, much like keys fitting into locks.



DNA is the code used to create long chains of molecules (amino acids) that then go on to combine into proteins.

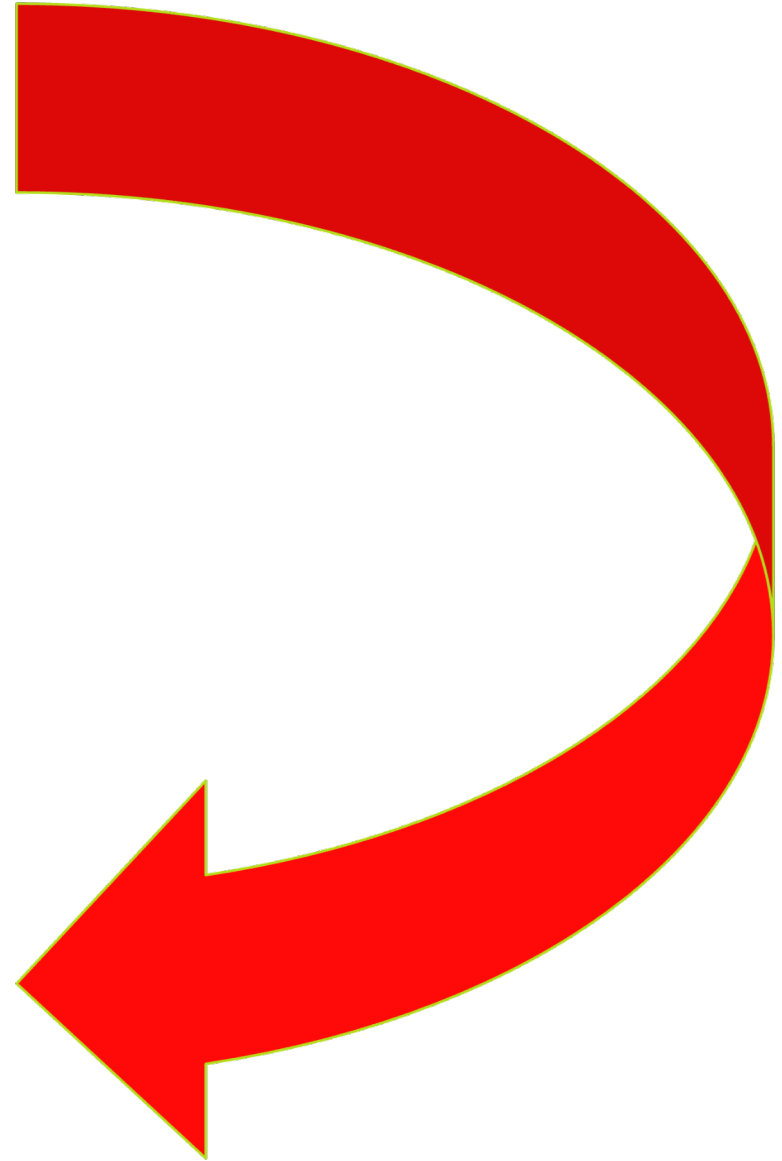
The specific code in your DNA impacts the quality, abundance, and even potential absence of certain proteins in your brain and body.

Proteins are used to create your endocannabinoid system, creating a lock that can only be activated by cannabinoids.

Finding the right key requires knowing what kind of locks your body has.
Strain Genie uses your DNA (locks) to help find you the right cannabis products (keys).

Right Treatment

Right Patient



Undifferentiated 'pattern of injury' glomerulonephritis
(MN, FSGS, MPGN, C3GN, IgAN(?),
lupus nephritis, small vessel vasculitis)

Deep phenotyping and analysis by
multi-omics of serum, urine, tissue

Sophisticated morphometric or
kidney biopsy and image analysis

Artificial intelligence and machine learning
Unbiased hierarchical clustering

Expose novel targets for treatment,
develop target specific agents

Organize and execute clinical trials
of novel agents directed to specific
pathways of injury using
surrogate or 'hard' end-points

Patients

Basic Science Teams

Clinical/Translational Teams

Specialty Clinics/Services

Administration

Government/Access to Therapy

INTEGRATION OF CARE

RIGHT THERAPY, RIGHT PATIENT

Where will this be done and how?

Klassen Bellusci Precision Kidney Clinic

Opening June 2025



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—  —

2025

Back to the Case

- The year is 2024
 - 17F is diagnosed with a rare inflammatory kidney disease which was recently renamed as C3 glomerulonephritis (previously membranoproliferative GN)
 - She is very bright and has been accepted into an engineering degree
 - She asks:
 - What causes it?
 - Her precision labs reveal she has a mutation in Factor H and a C3 Nephritic Antibody
 - Can it be treated?
 - Yes – A phase 3 clinical trial has been published with a targeted therapy for her condition
 - Compassionate access is obtained to this targeted therapy with significant improvement in renal parameters
 - Her kidney future looks much brighter and if this treatment is not the answer we can enroll her in other clinical trials

Questions??

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