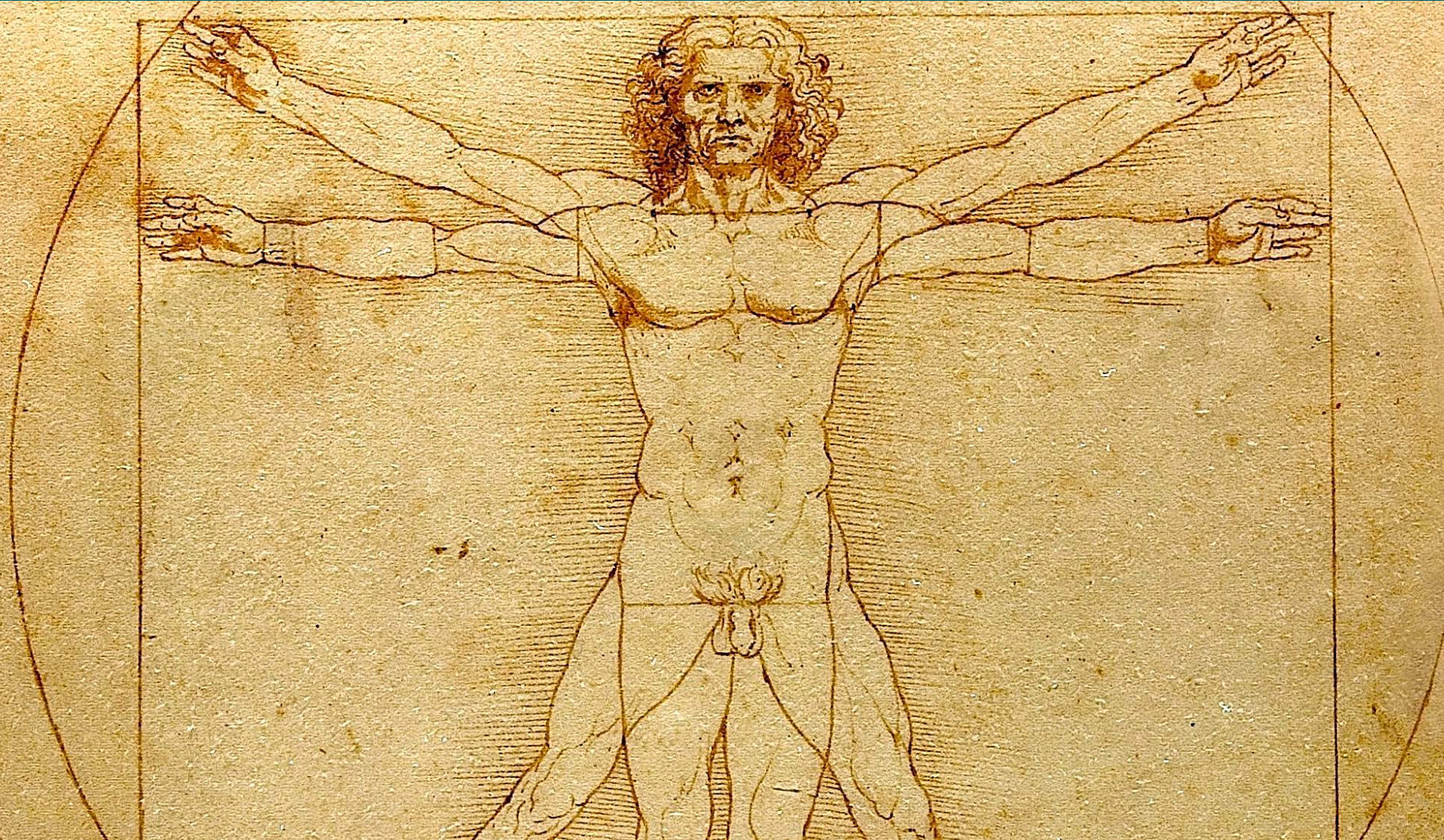


Men's Health: from the Prostate to the Brain





a place of mind

Vancouver
CoastalHealth
Research Institute

Men's Health: From the Prostate...

Michael E. Cox, PhD

Dept. Urologic Sciences, University of British Columbia

The Vancouver Prostate Centre, Vancouver Coastal Health Research Institute

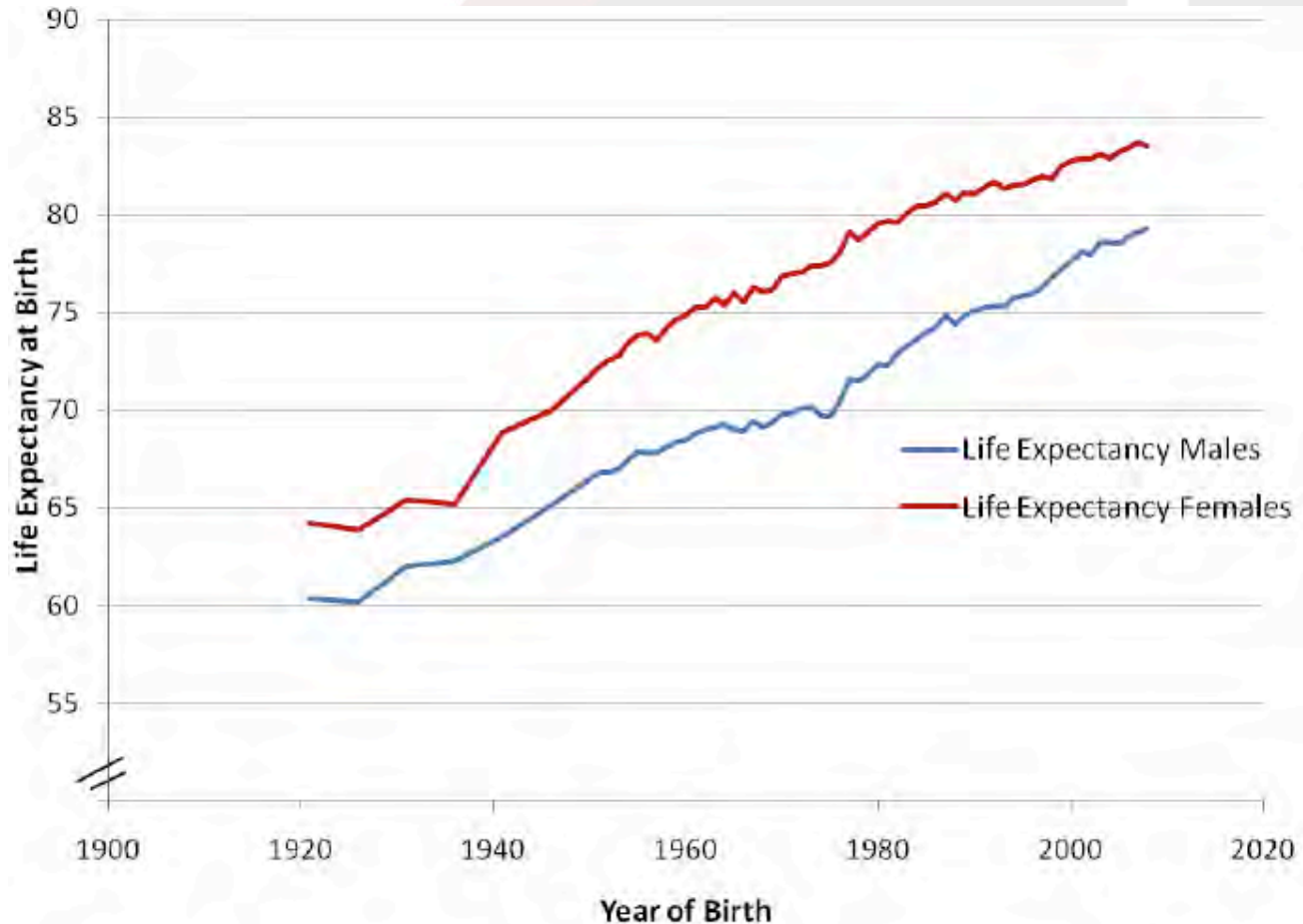


Department of
UROLOGIC SCIENCES
UBC



**VANCOUVER
PROSTATE CENTRE**
A UBC & VGH Centre of Excellence

The Life Expectancy Discrepancy



Canadian Men are:
79% more likely to die from heart disease,
57% more likely to die from type 2 diabetes
40% more likely to die from cancer
4 times more likely to commit suicide.

Urology: a Lens into Men's Health

A magnifying glass with a black handle and a silver spring is positioned over a white background. The lens of the magnifying glass is centered on a list of urological conditions. The text is arranged in a vertical list, with the first three items enclosed in a red rounded rectangle. The background features a large, faint magnifying glass graphic.

Prostate Cancer
BPH/LUTS
Prostatitis

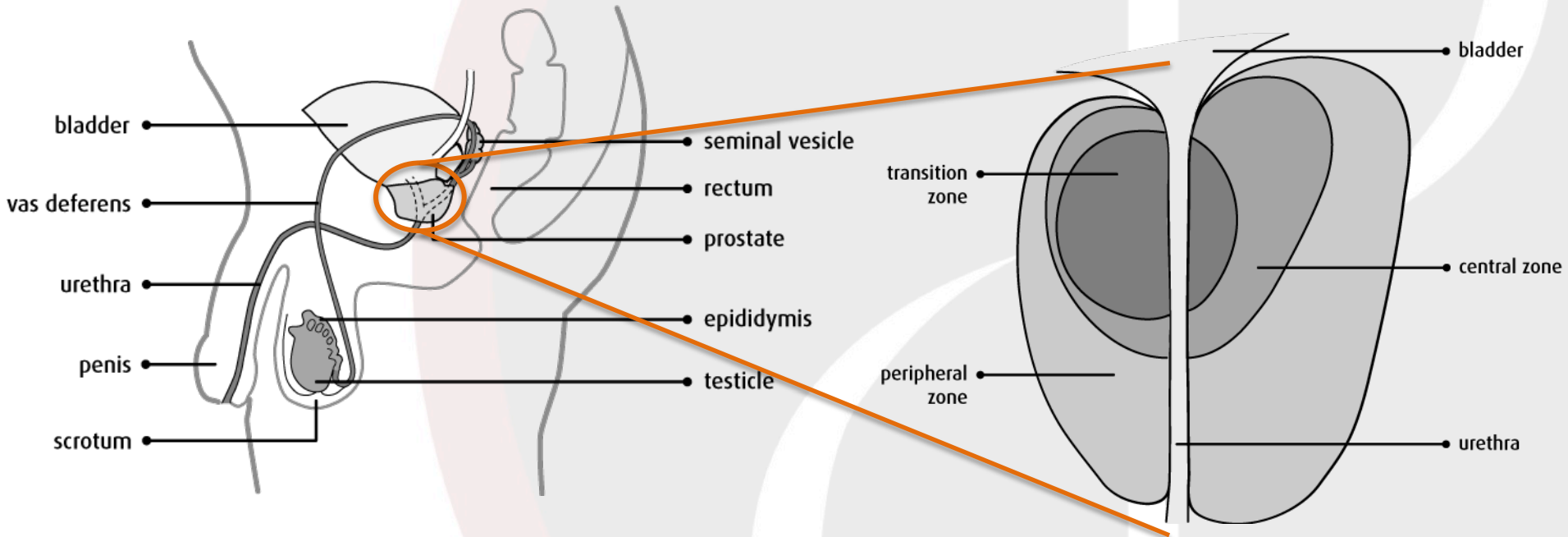
ED

Male Infertility
Penile Pathology
Testicular Cancer
UDT

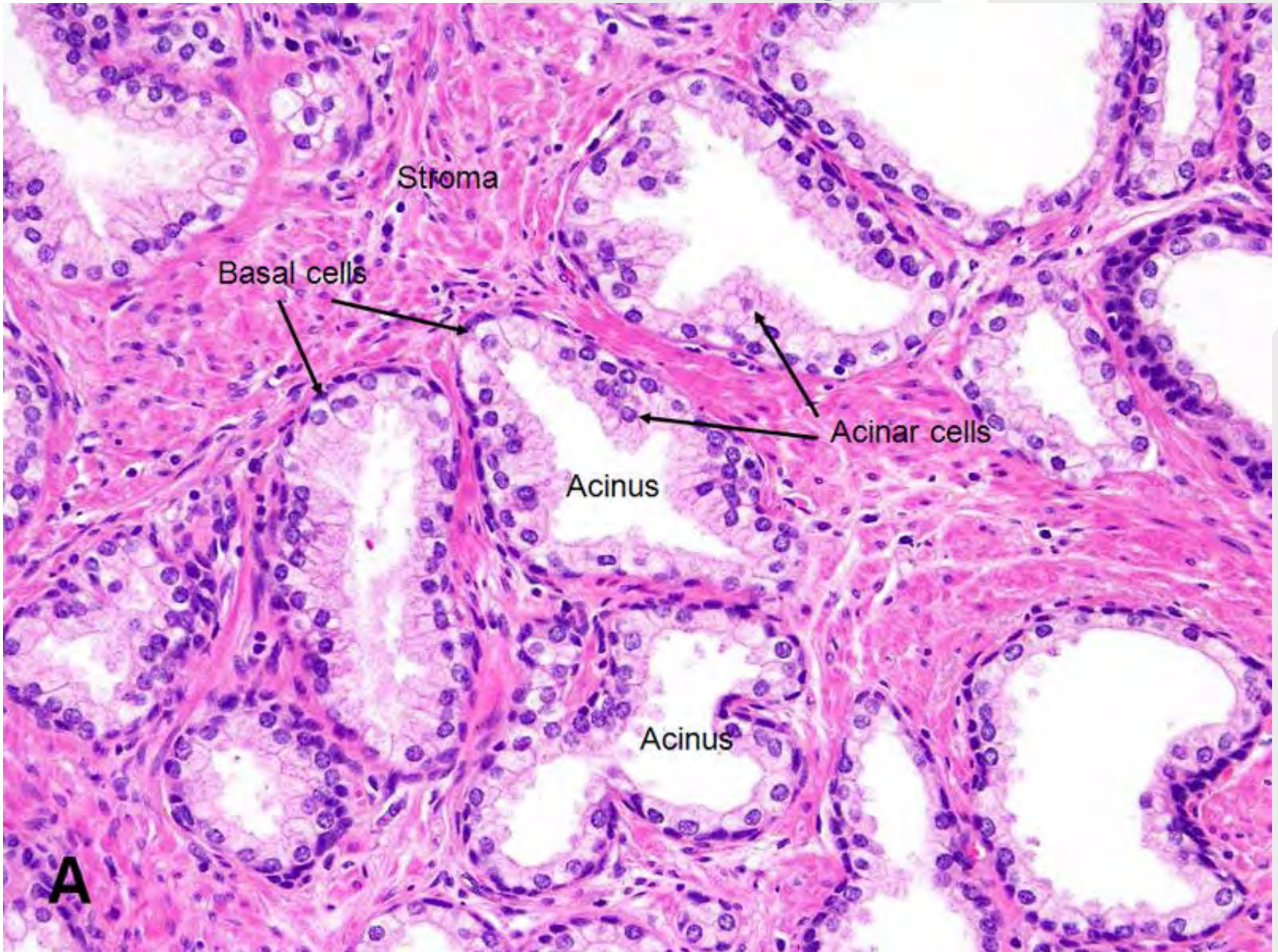
What Is The Prostate Gland?

Male Reproductive System

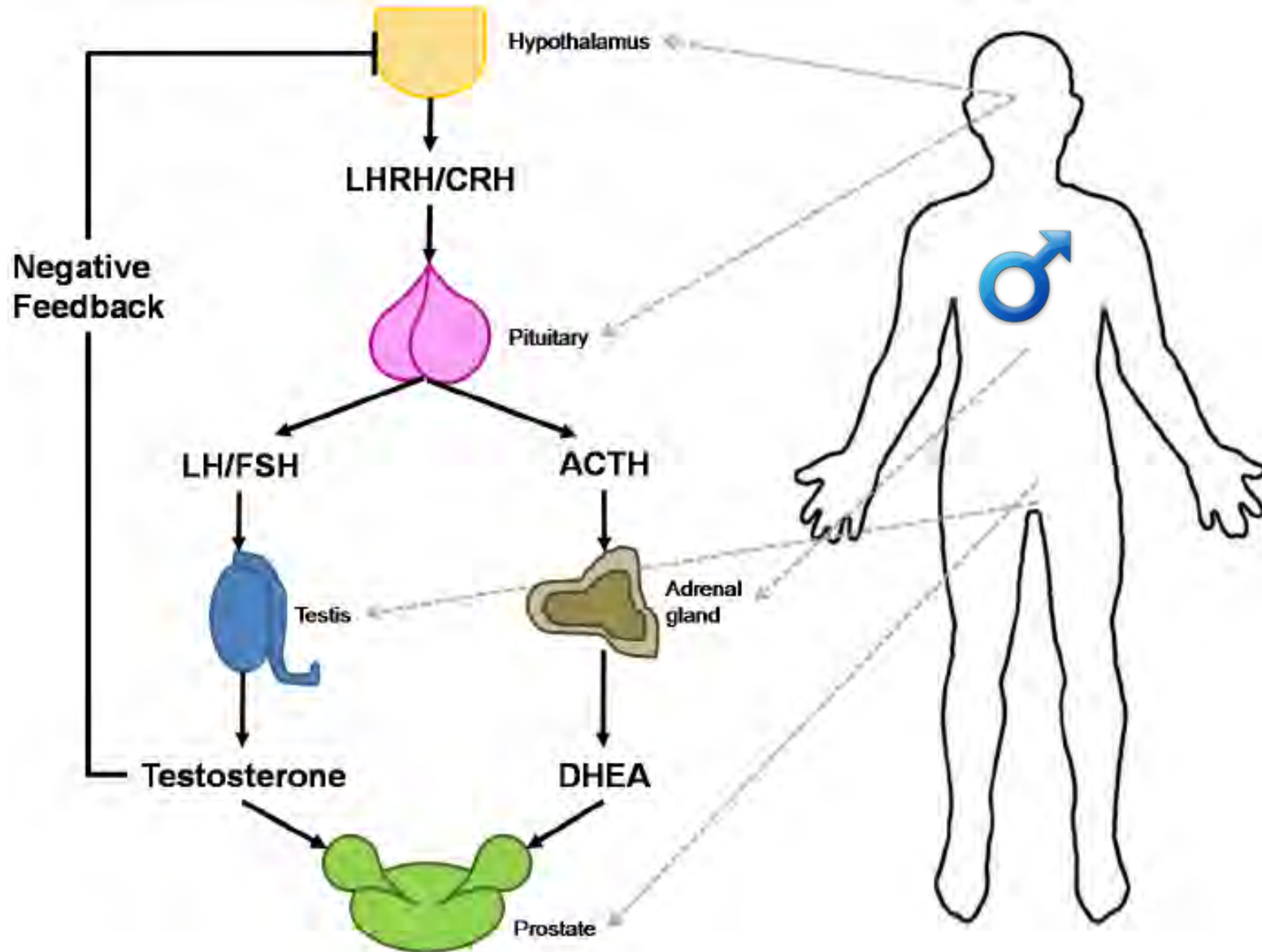
Prostate Zones



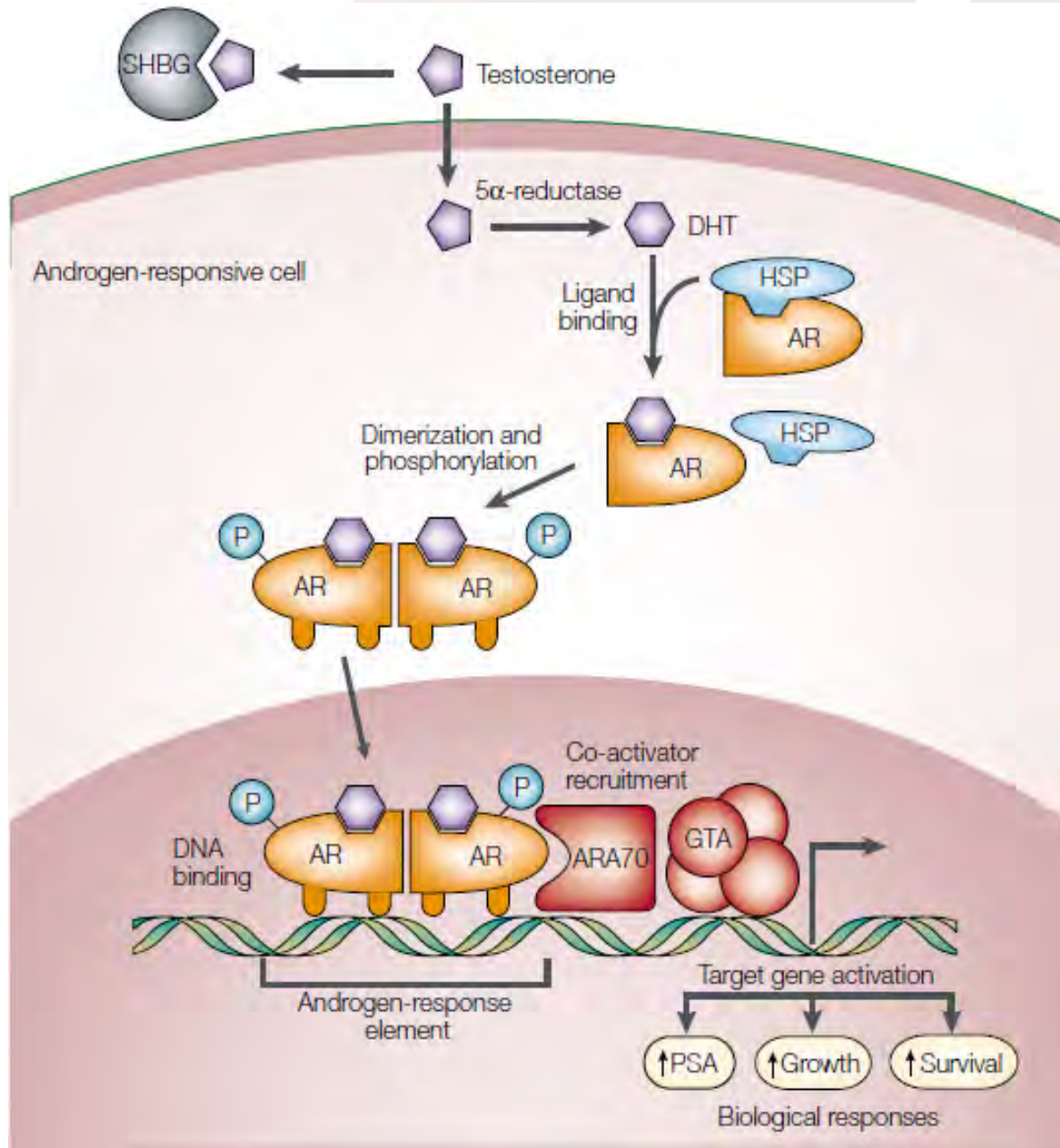
Prostate Histology

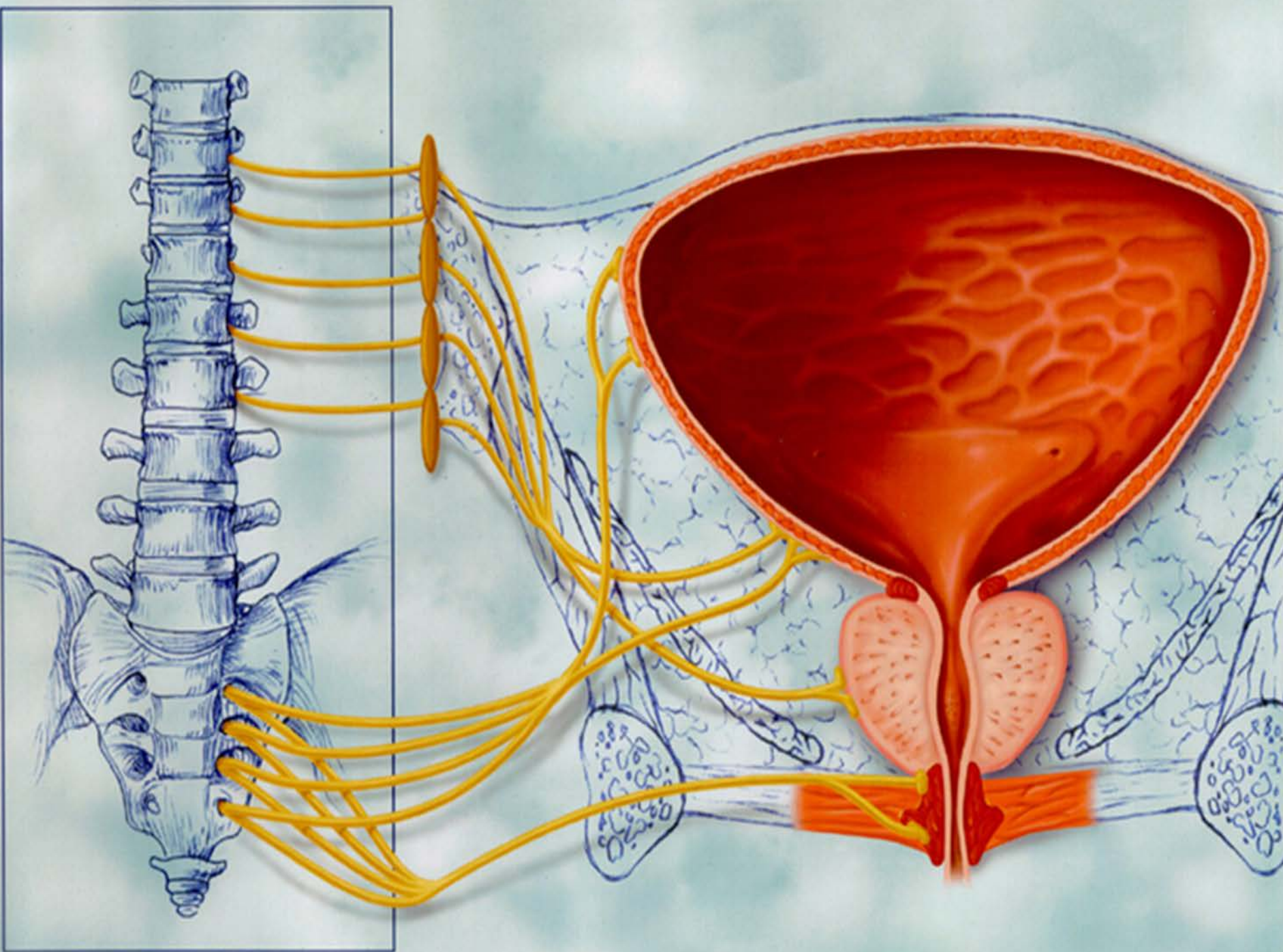


Androgens Control Prostate Development



Androgens: Mechanism of Action





The Prostate Gland & the Ageing Male: “Gram-for-gram the most diseased organ in the body”

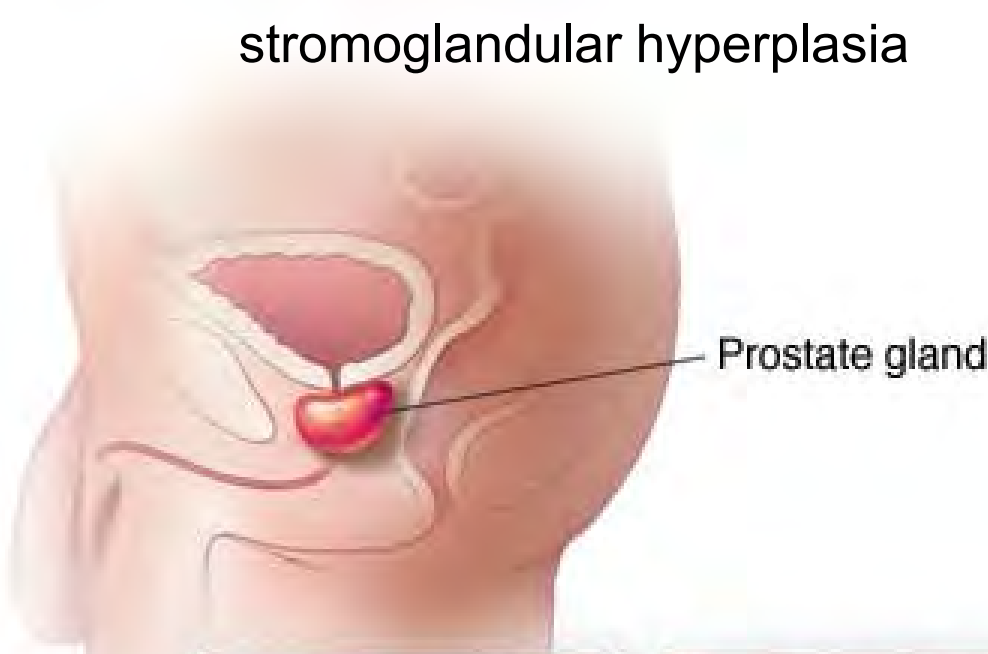
stromoglandular hyperplasia

AGE 20-30

Most healthy men have a prostate the size of a

AGE 50-70

Over 50% of men are affected. A swollen prostate the size of a grapefruit makes it difficult to urinate, and sexual function is noticeably impaired.



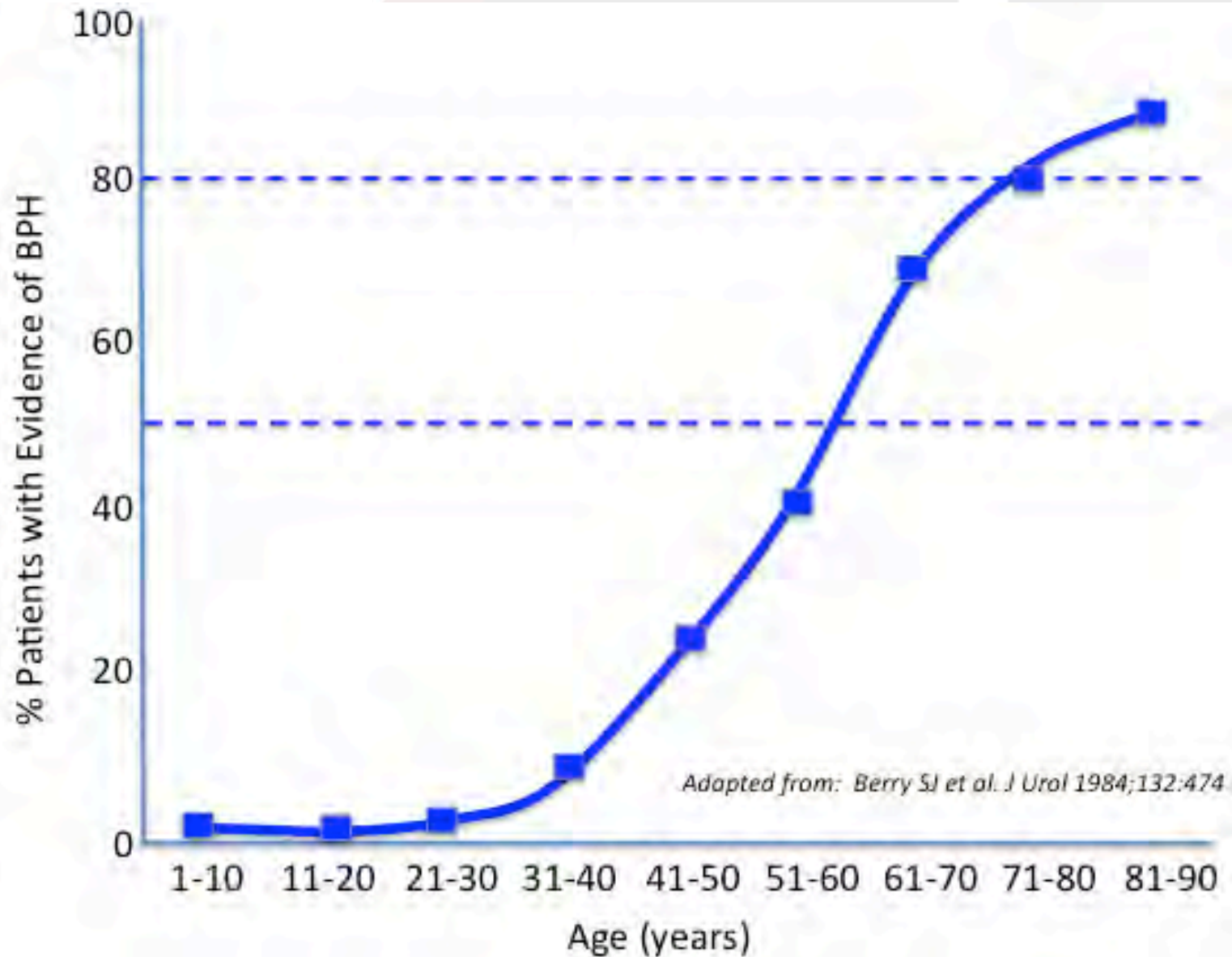
Normal Prostate



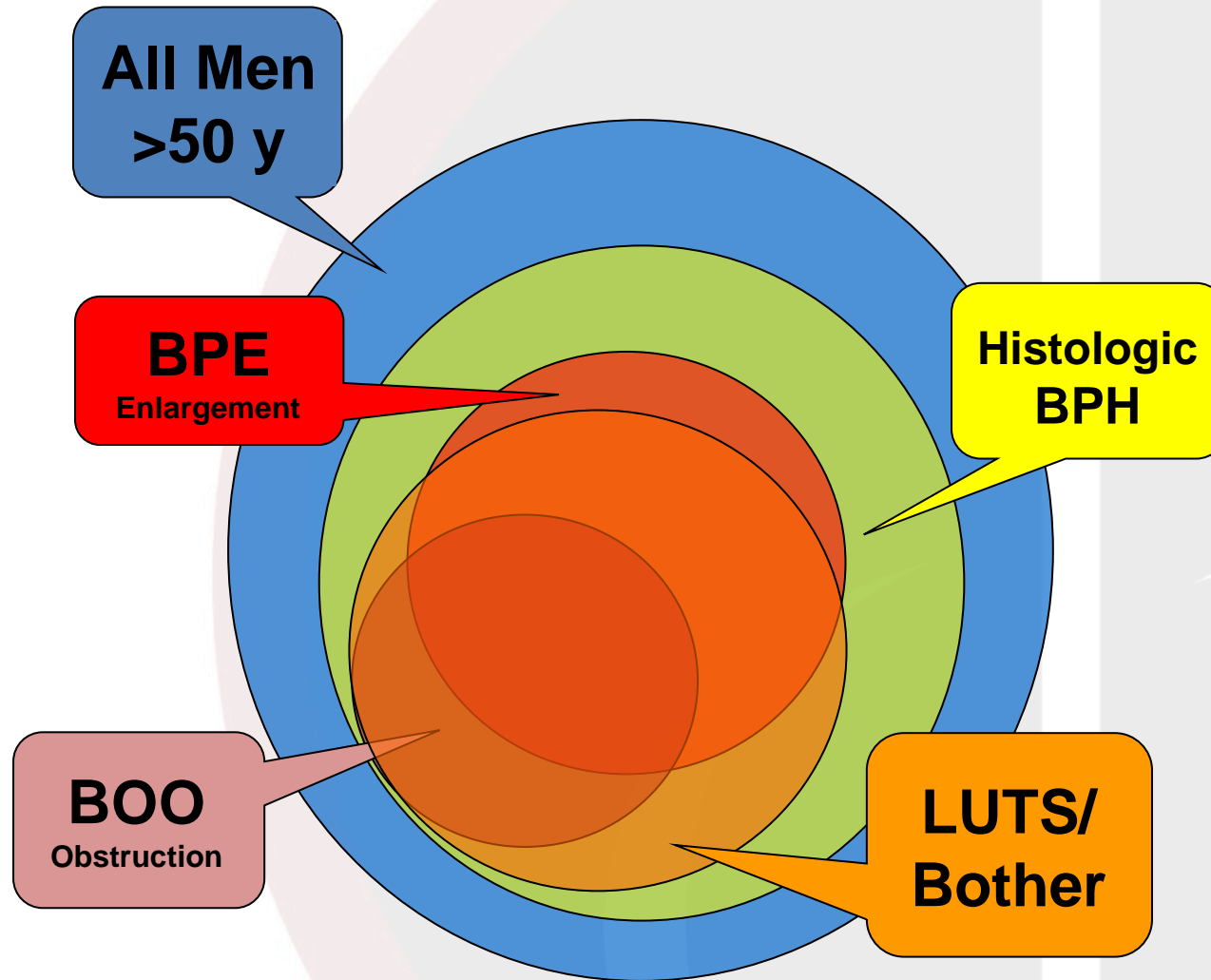
Enlarged Prostate



Benign Prostatic Hyperplasia (BPH): the Most Common Neoplasia



BPH and Associated Syndromes



May be associated with
Lower Urinary Track Syndrome
Benign Prostatic Enlargement
Bladder Outlet Obstruction

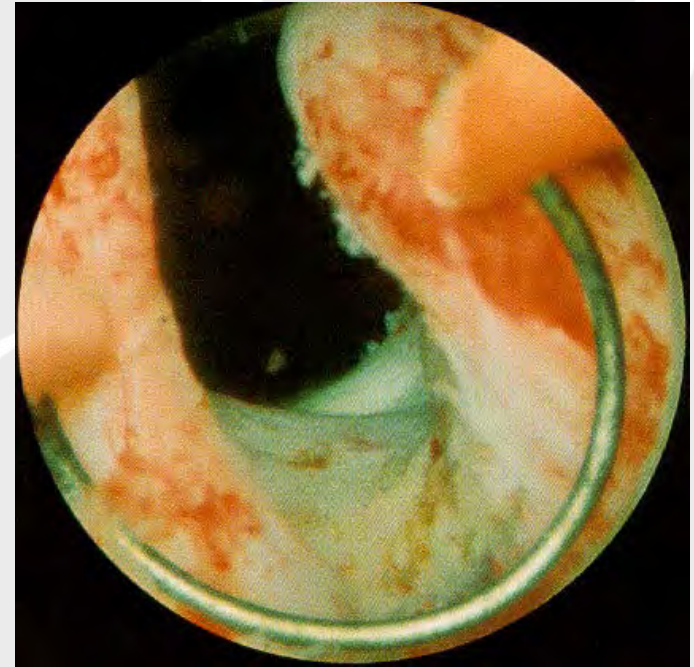
Medical Treatments for BPH Symptoms

Pharmacology

5 α -Reductase Inhibitors:
Stop Disease Progression

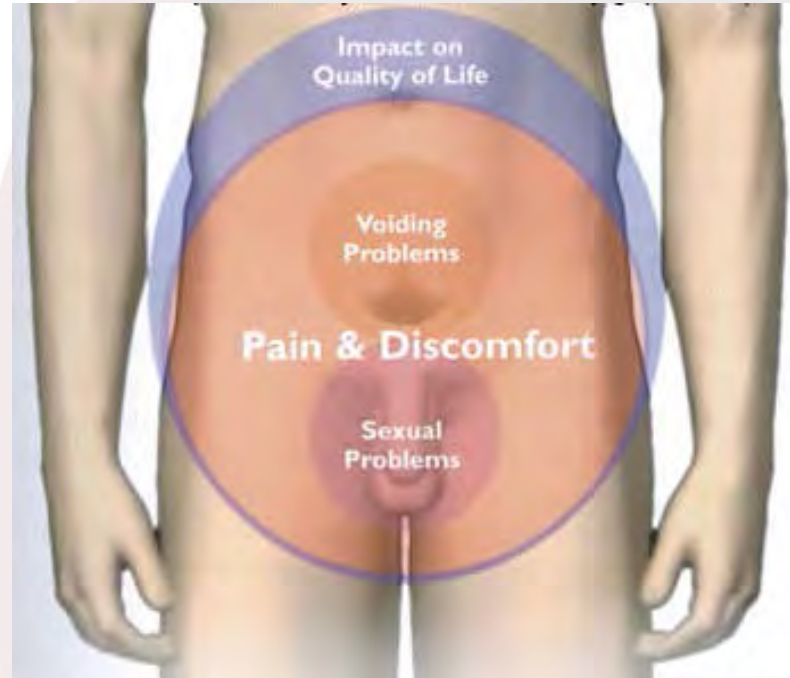
Alpha-Blockers:
Rapidly Relieve Symptoms

Surgery



Prostatitis: the Enigmatic Disease

Most common urologic diagnosis in men < 50,
3rd most common in men > 50.



Cat I: Acute Bacterial Prostatitis

Cat II: Chronic Bacterial Prostatitis

Cat III: Chronic Pelvic Pain Syndrome

90% Cat IIIA: Inflammatory CPPS

Cat IIIB: Non-inflammatory CPPS

Cat IV: Asymptomatic Inflammatory Prostatitis

Prostatitis/CPPS Management

Goals:

- Target the infectious agent,
- Reduce inflammation,
- Improve urodynamics.

ANTIMICROBIALS

ANTIBIOTICS/ ANTIBACTERIALS

against bacteria, e.g.
drugs for bacterial
pneumonia

ANTIVIRALS

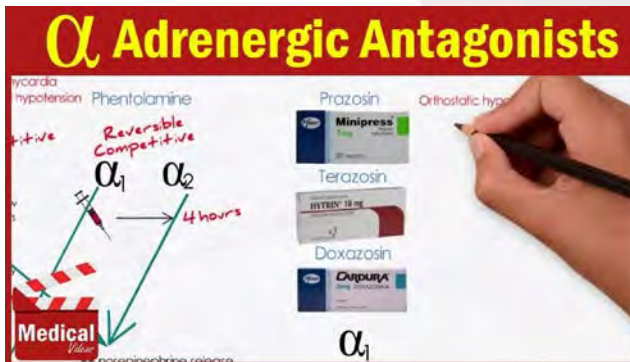
against viruses, e.g.
drugs for herpes
and HIV

ANTIPARASITIC AGENTS

against parasites,
e.g. drugs for
malaria

ANTIFUNGALS

against fungi, e.g.
drugs for yeast
infections



Canadian Cancer Rates by Site

Incidence

Mortality



Males
103,100
New cases



Females
103,200
New cases

Prostate	20.7%	Breast	25.5%
Colorectal	14.5%	Lung and bronchus	13.8%
Lung and bronchus	14.0%	Colorectal	11.5%
Bladder	6.5%	Uterus (body, NOS)	7.1%
Non-Hodgkin lymphoma	4.5%	Thyroid	5.2%
Kidney and renal pelvis	4.1%	Non-Hodgkin lymphoma	3.6%
Melanoma	3.9%	Melanoma	3.2%
Leukemia	3.5%	Ovary	2.7%
Oral	3.1%	Pancreas	2.6%
Pancreas	2.7%	Leukemia	2.5%
Stomach	2.1%	Kidney and renal pelvis	2.3%
Liver	1.8%	Bladder	2.1%
Esophagus	1.7%	Cervix	1.5%
Brain/CNS	1.6%	Oral	1.4%
Multiple myeloma	1.6%	Brain/CNS	1.3%
Thyroid	1.6%	Stomach	1.3%
Testis	1.1%	Multiple myeloma	1.2%
Larynx	0.9%	Liver	0.6%
Hodgkin lymphoma	0.6%	Esophagus	0.5%
Breast	0.2%	Hodgkin lymphoma	0.4%
All other cancers	9.3%	Larynx	0.2%
		All other cancers	9.6%



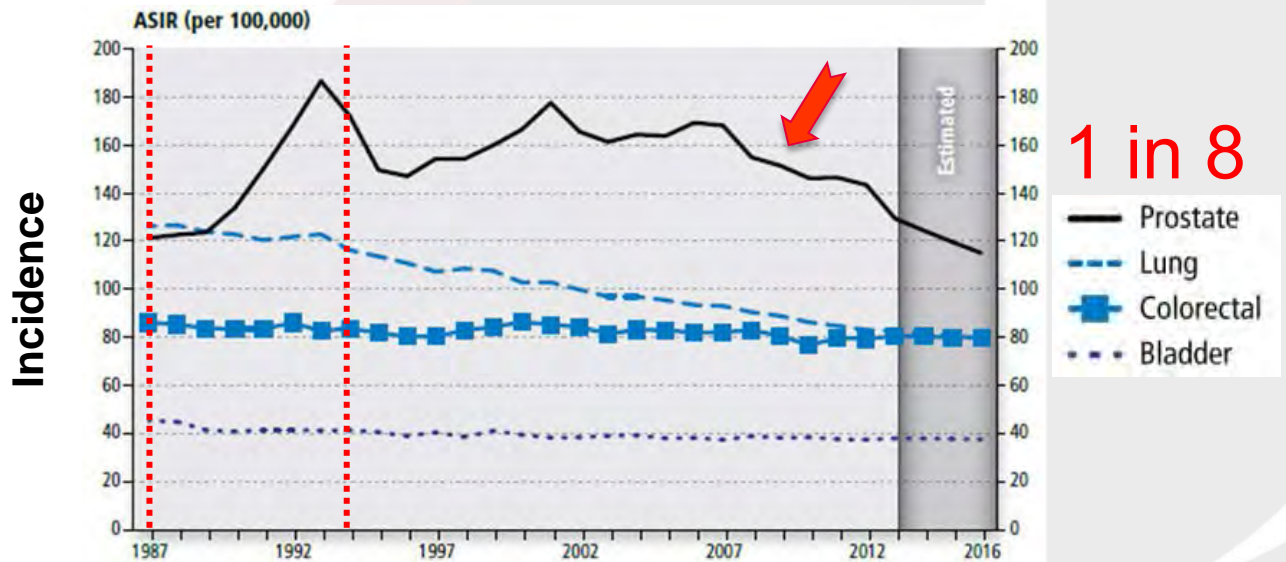
Males
42,600
Deaths



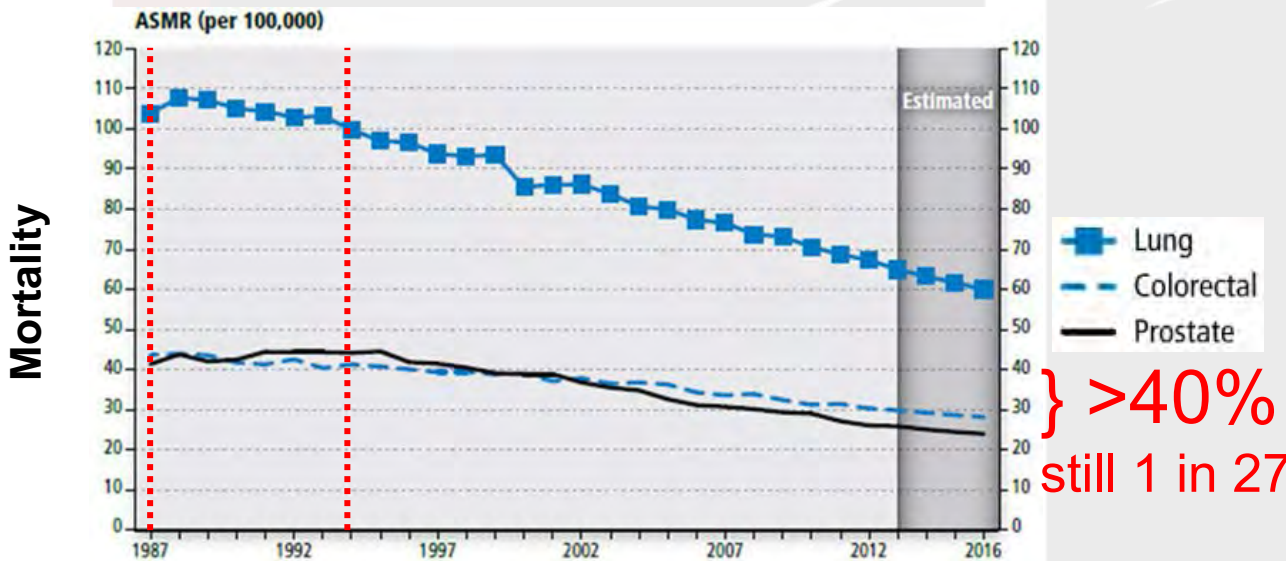
Females
38,200
Deaths

Lung and bronchus	26.1%	Lung and bronchus	26.2%
Colorectal	12.0%	Breast	13.1%
Prostate	9.6%	Colorectal	11.3%
Pancreas	5.6%	Pancreas	6.3%
Bladder	4.0%	Ovary	4.7%
Esophagus	3.9%	Leukemia	3.3%
Leukemia	3.9%	Non-Hodgkin lymphoma	3.1%
Non-Hodgkin lymphoma	3.5%	Uterus (body, NOS)	3.0%
Brain/CNS	3.2%	Brain/CNS	2.7%
Stomach	2.9%	Stomach	2.1%
Kidney and renal pelvis	2.8%	Bladder	1.8%
Liver*	2.2%	Kidney and renal pelvis	1.8%
Oral	2.0%	Multiple myeloma	1.7%
Multiple myeloma	1.9%	Esophagus	1.3%
Melanoma	1.9%	Melanoma	1.2%
Larynx	0.8%	Cervix	1.0%
Thyroid	0.2%	Oral	1.0%
Hodgkin lymphoma	0.2%	Liver*	0.7%
Breast	0.1%	Thyroid	0.3%
Testis	0.1%	Larynx	0.2%
All other cancers	12.9%	Hodgkin lymphoma	0.2%
		All other cancers	12.8%

Male Cancer Incidence & Mortality Rates 1987-2016

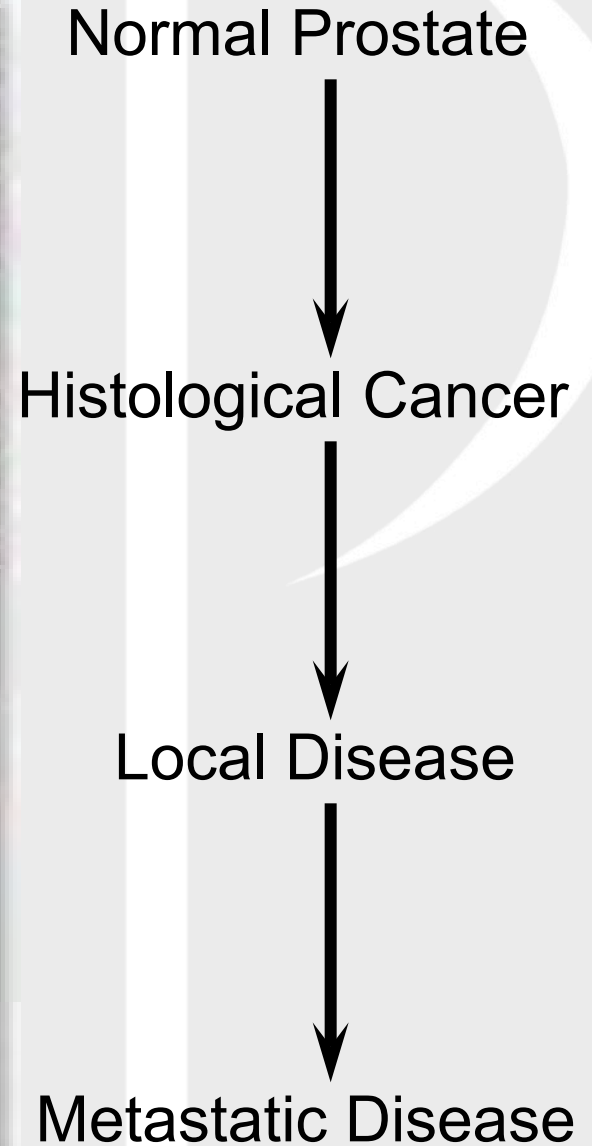
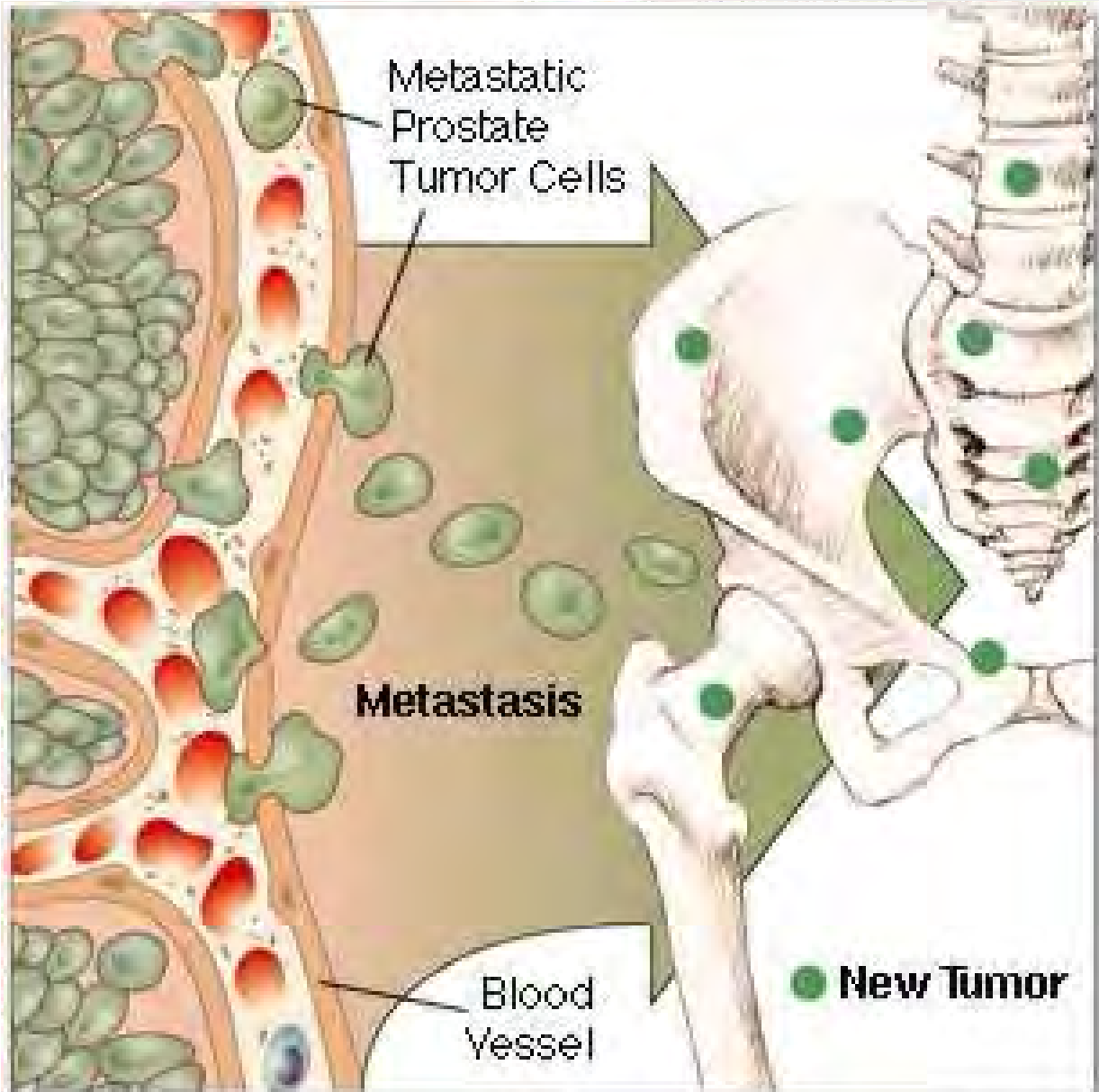


1 in 8



PSA Testing PSA Screening

Prostate Cancer Development & Progression



Risk Factors for Prostate Cancer

Unmodifiable(Beyond Your Control):

Age

Race

Family History

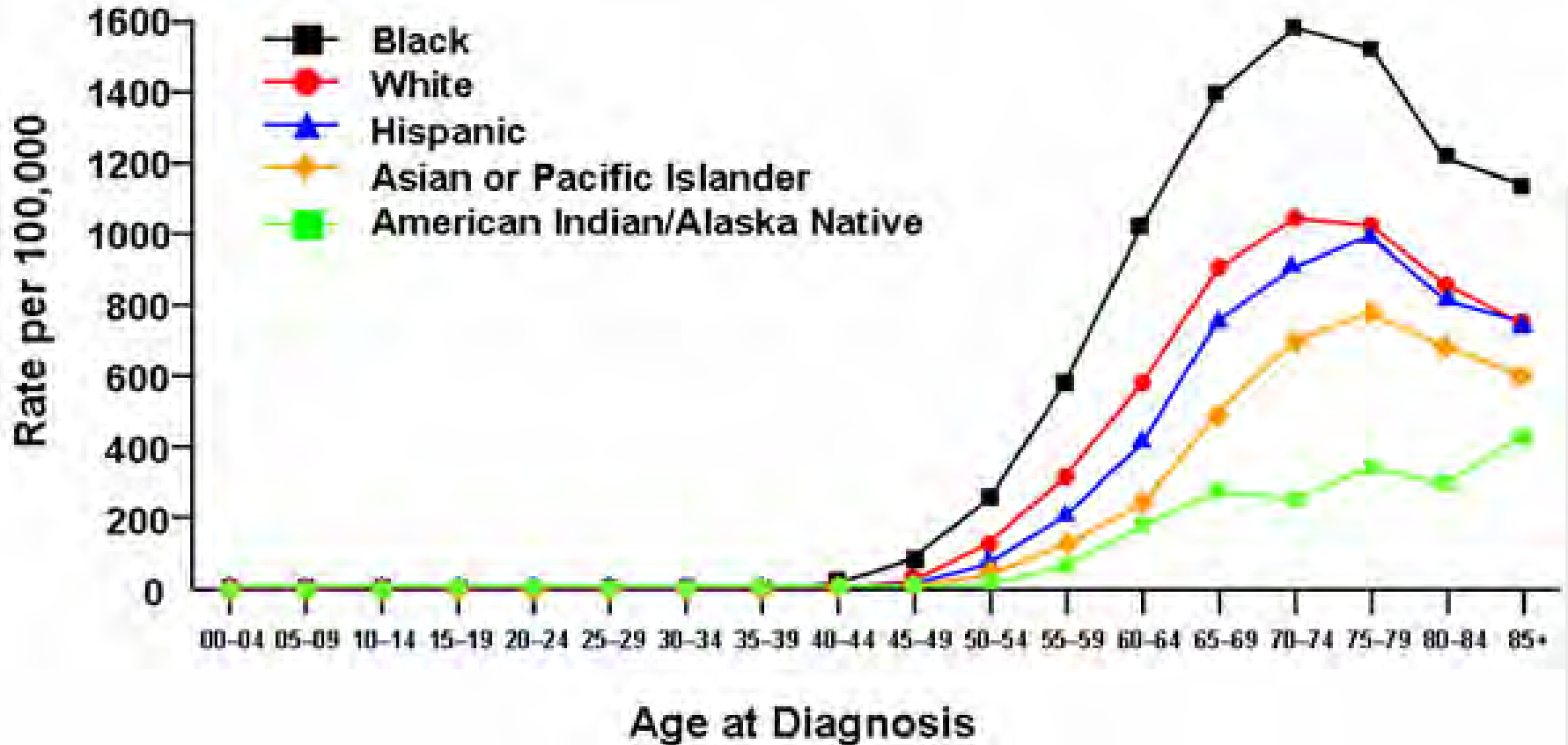
Modifiable (Lifestyle):

Geography

Diet

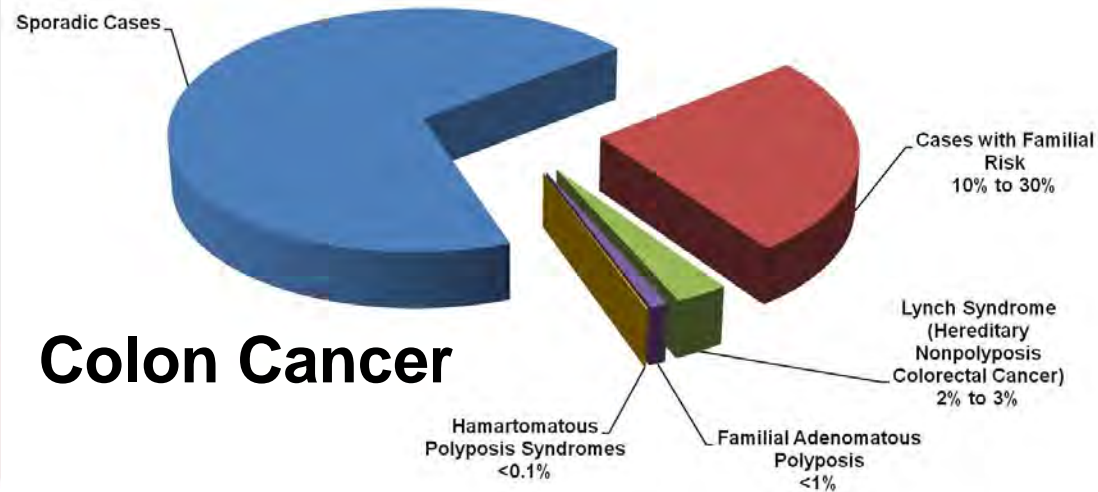
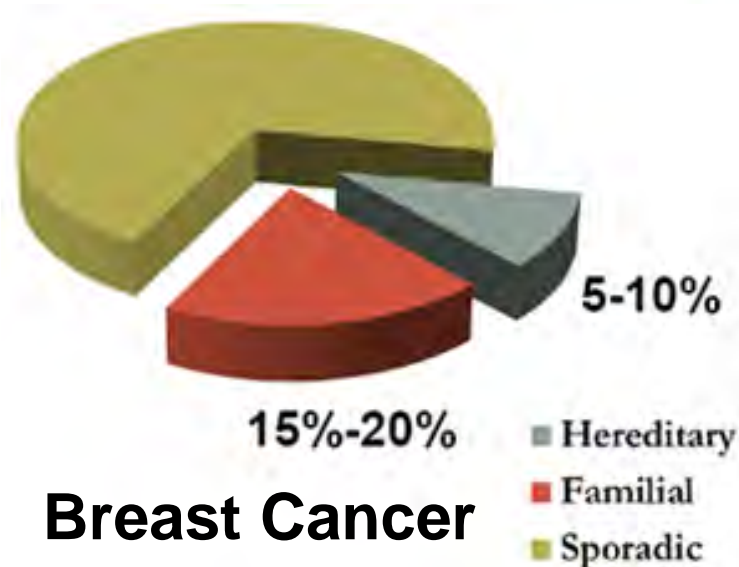
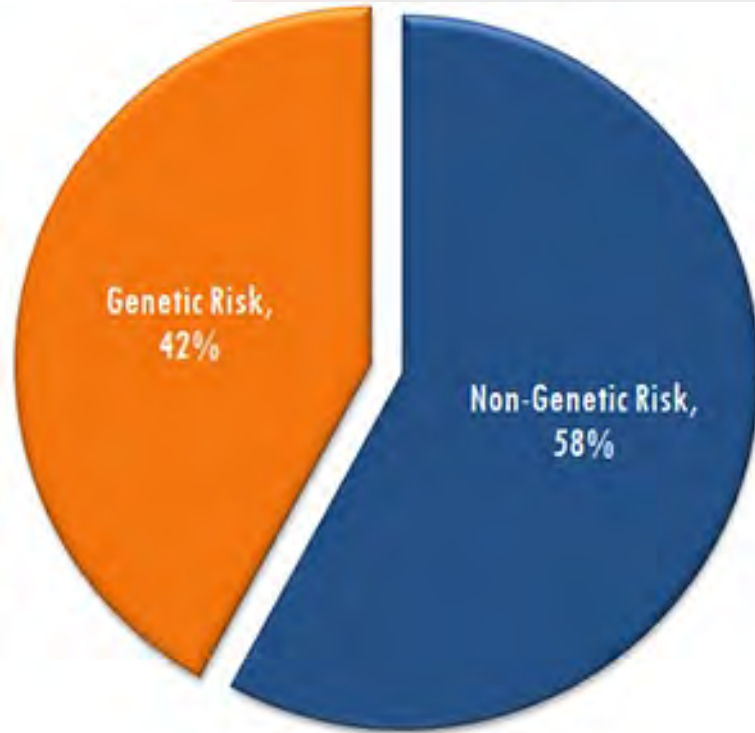
Exercise

Prostate Cancer: Risk of Diagnosis by Age & Race



Of all cancers, PCa incidence increases most dramatically with age

Prostate Cancer: Family History vs Environment



Colon Cancer

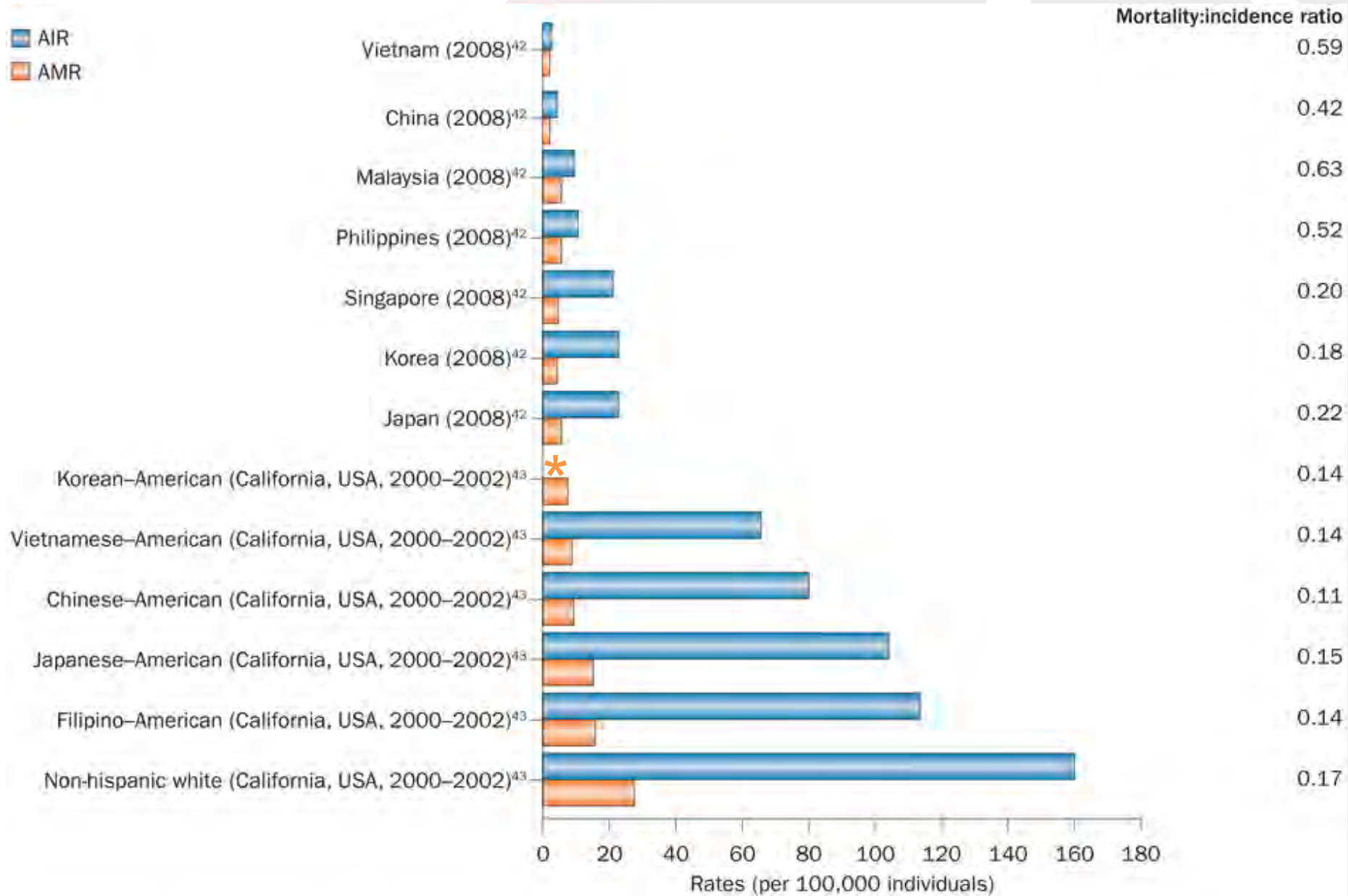
Prostate Cancer: Family History Risk

*Family History of
Prostate Cancer*



B = Brother F = Father

Prostate Cancer: Role of Geography?



Dietary Factors Impacting Prostate Cancer Risk

Table 1. Factor-loading matrix for two dietary patterns identified from post-diagnostic FFQ among men with prostate cancer ($n = 926$) in the PHS^a

Food group	Prudent dietary pattern	Western dietary pattern
Legumes	0.55	—
Dark-yellow vegetables	0.55	—
Green, leafy vegetables	0.54	—
Other vegetables	0.54	—
Fruit	0.51	—
Cruciferous vegetables	0.51	—
Tomatoes	0.49	—
Whole grains	0.44	—
Garlic	0.40	—
Soy products	0.36	—
Fish	0.32	—
Oil and vinegar dressing	0.31	—
Processed meats	—	0.66
Red meats	—	0.60
Eggs	—	0.48
Snacks	—	0.46
High-fat dairy products	—	0.45
Potatoes	—	0.44
French fries	—	0.42
Butter	—	0.39
Sweets and desserts	—	0.35
Refined grains	—	0.33

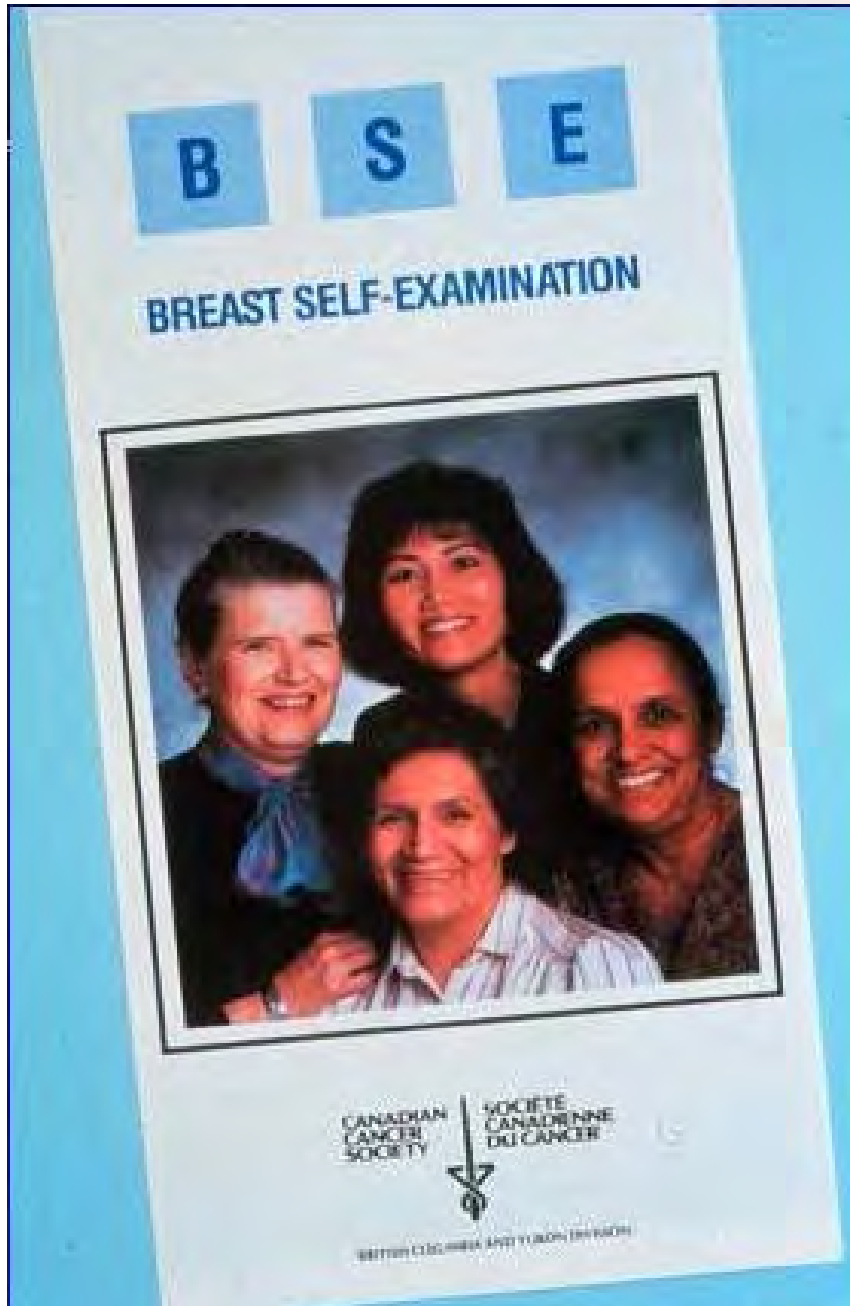
^aFood groups with loading factors less than 0.3 for both dietary patterns were not listed in the table, and included fruit juice, poultry, condiments, nuts, tea, low-fat dairy products, pizza, organ, cold breakfast cereal, wine, margarine, mayonnaise, low-energy drink, beer, coffee, high-energy drink, and liquor.

Prostate Cancer Symptoms

- Need to urinate frequently, especially at night
- Difficulty starting or holding back urination
- Weak or interrupted urine
- Painful or burning urination
- Erectile difficulties
- Painful ejaculation
- Blood in urine or semen
- Frequent pain or stiffness in the lower back, hips, or upper thighs

symptoms not typically helpful !

Early Detection Saves Lives!!

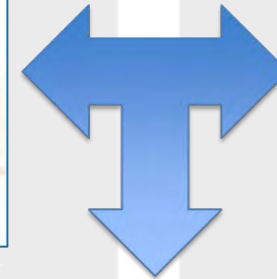


Suspicious DRE



&/or

Elevated PSA

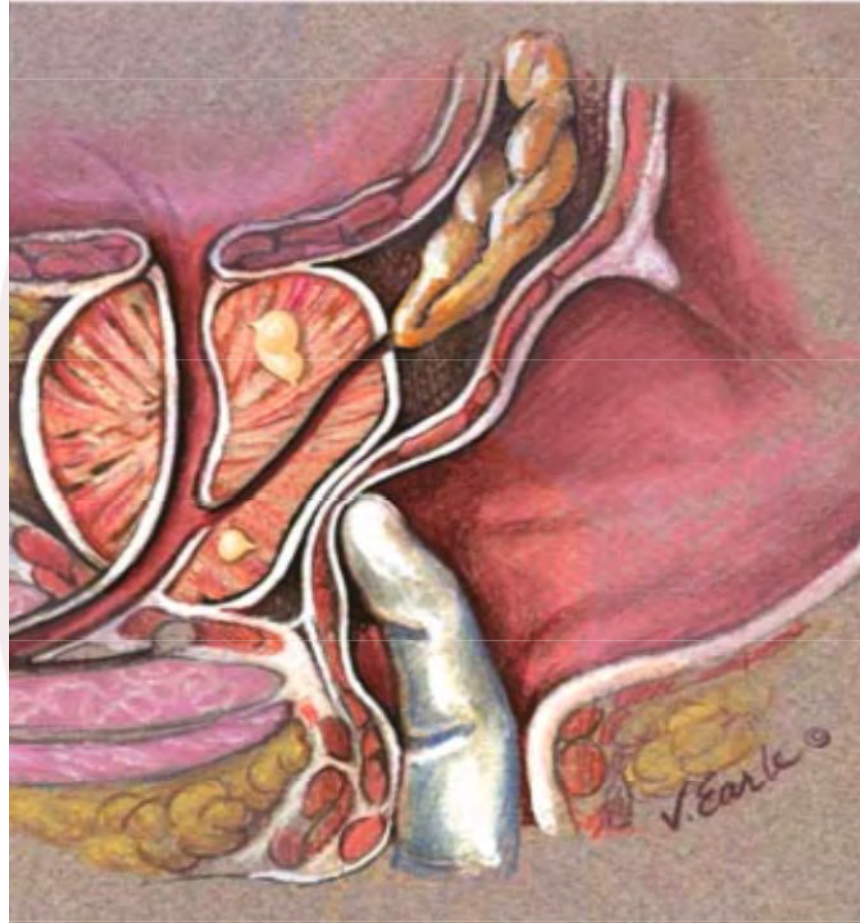


Prostate Biopsy



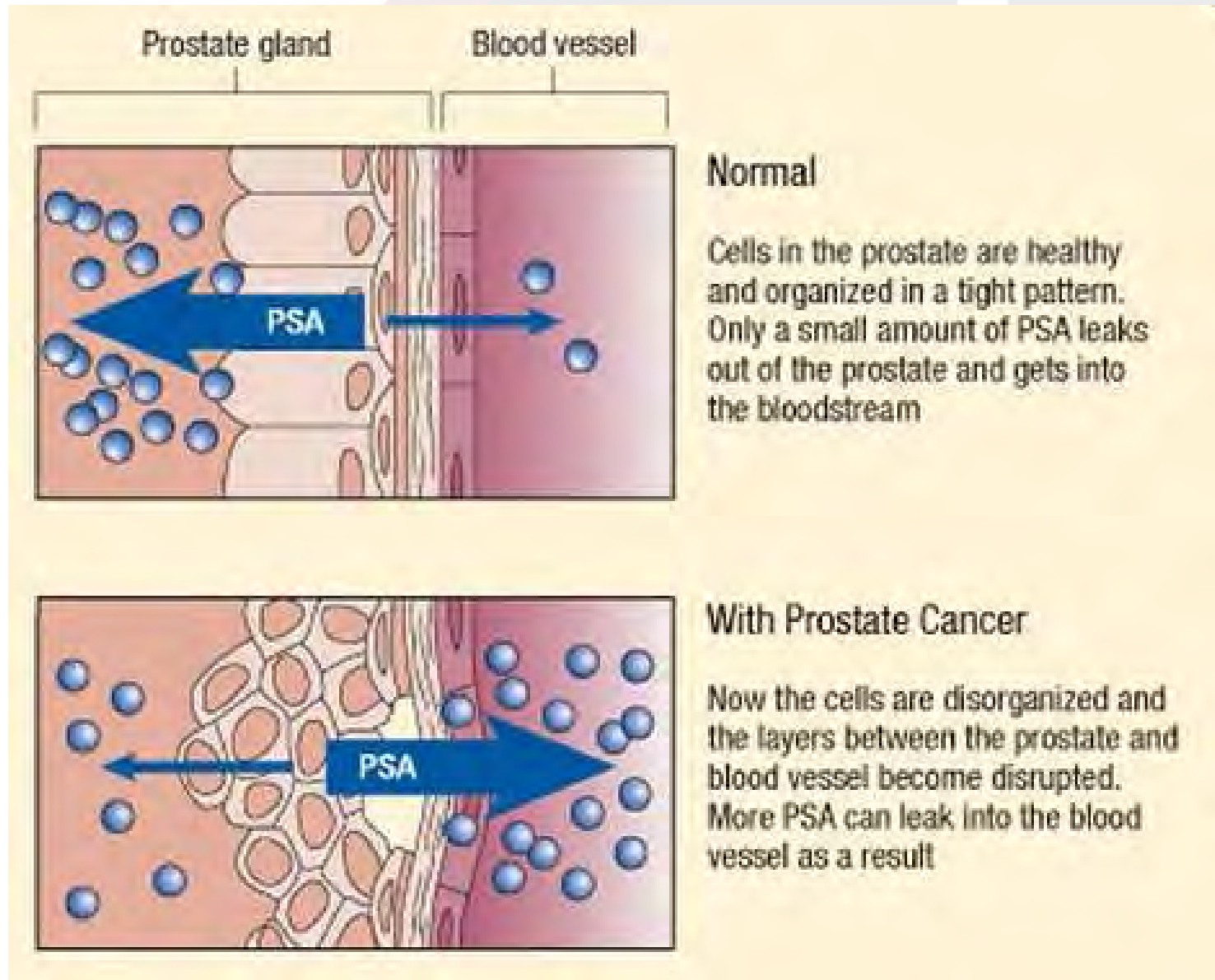
PCA3.org

Digital Rectal Examination (DRE)

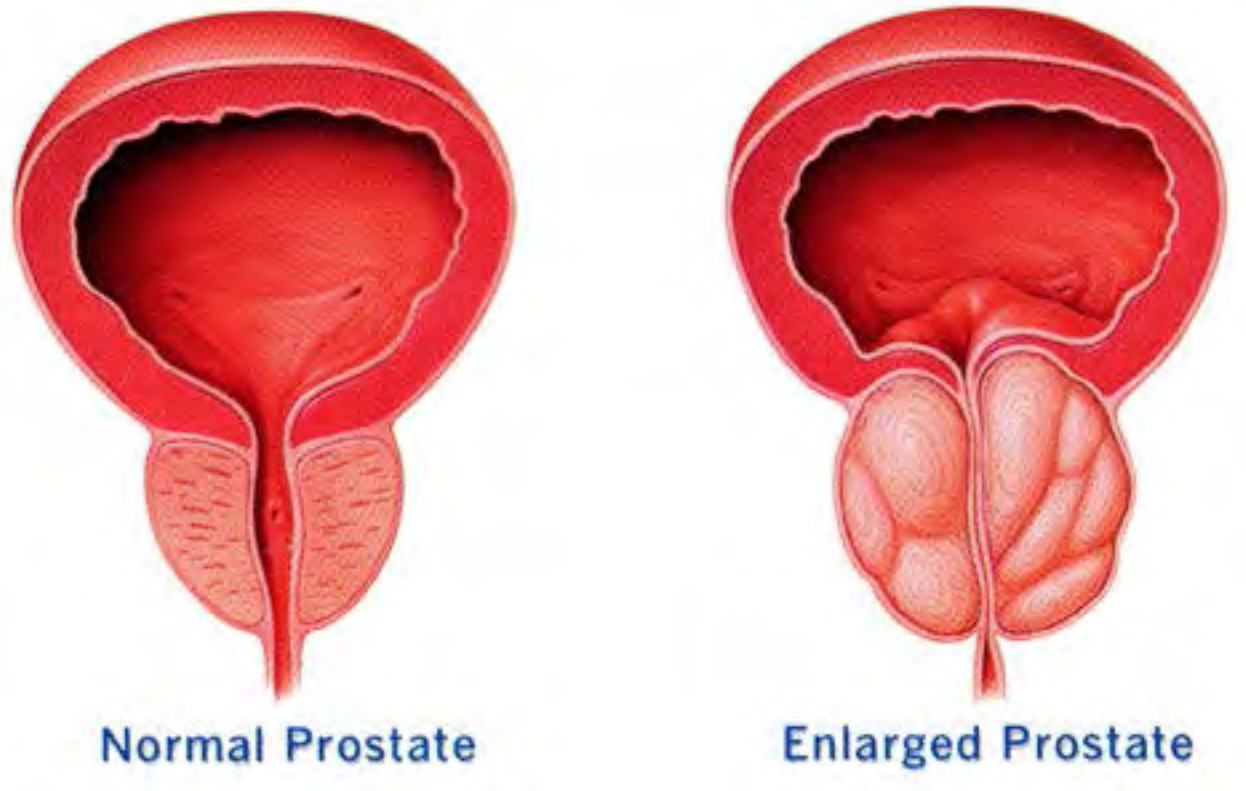


Prostate Specific Antigen (PSA)

liquefies semen and releases progressively motile sperm.



Things that can elevate serum PSA levels




Things that can elevate serum PSA levels



Things that can elevate serum PSA levels

Prostatitis?



Many are finding welcome relief through the gentle vibration, adjustable soothing heat, and dilation provided by the DILA-THERM. A modern, scientifically designed instrument for easy, economical home use. Liberal terms. Write today for full details and 30-day trial offer. **Inter-esting booklet on Prostatitis FREE**

THE DILA-THERM CO., INC.
1146 E. Colfax Ave., South Bend 24, Ind.

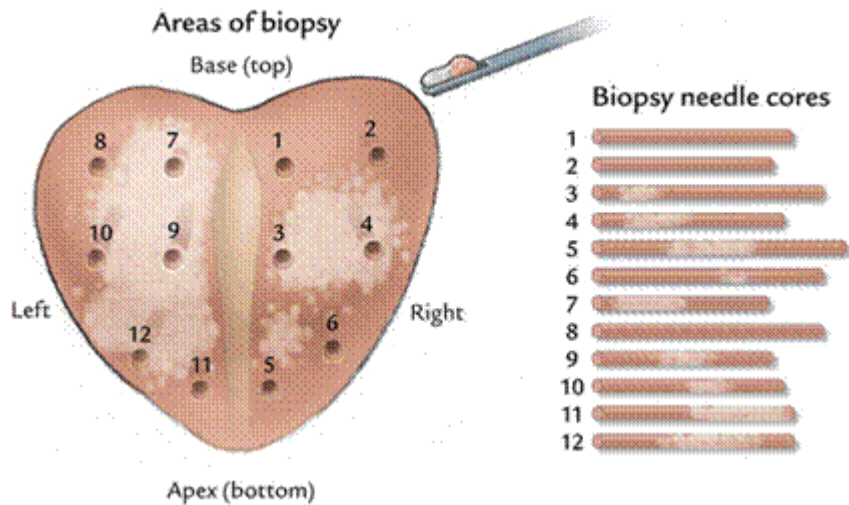
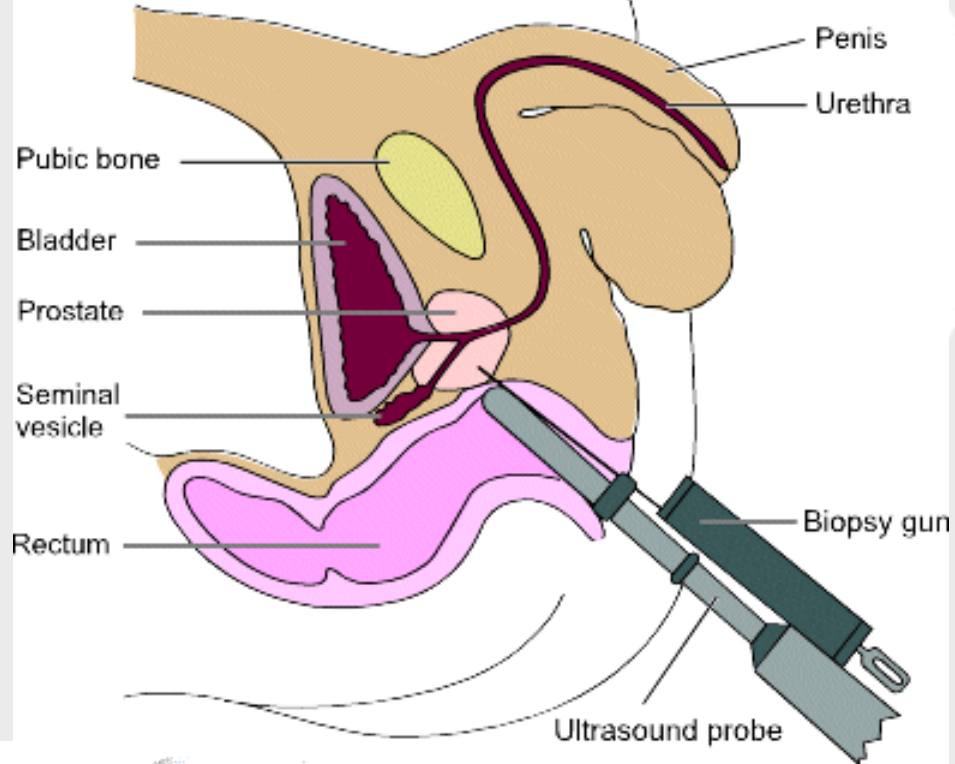
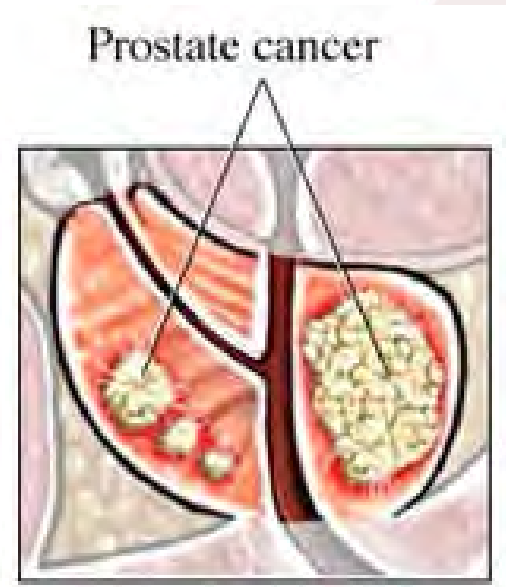
D I L A - T H E R M



Use of PSA as a Tumor Marker

- 1. Early detection**
- 2. Staging once PCa is diagnosed**
- 3. Post-treatment assessment and management**

TRUS-Guided Needle Biopsy



Gleason Grading



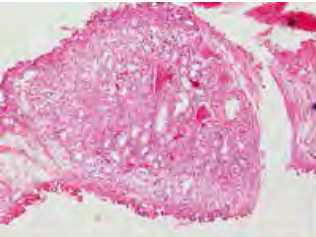
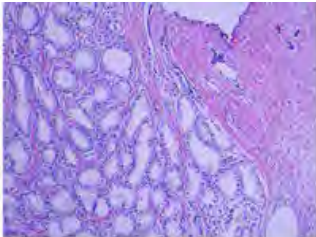
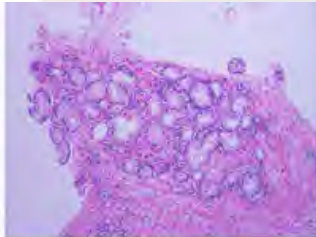
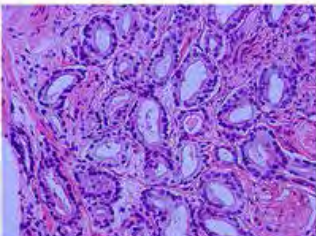
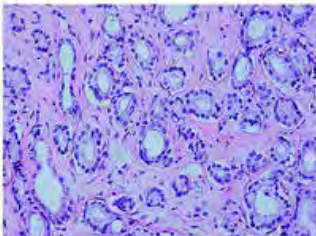
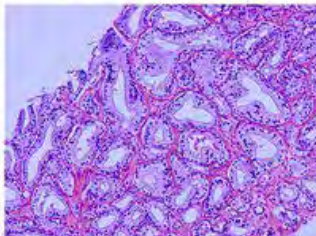
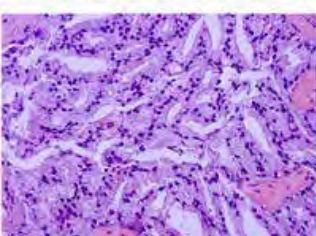
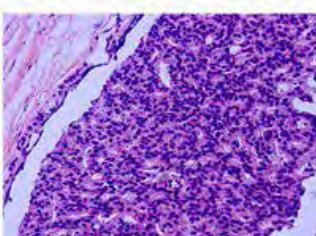
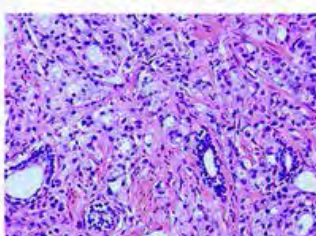
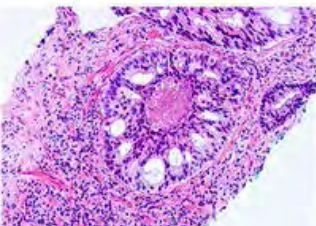
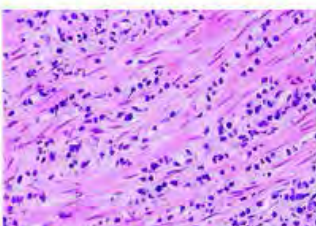
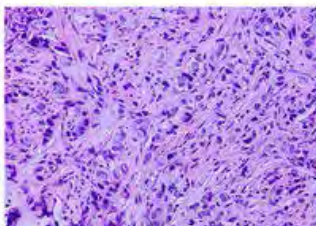
Donald F. Gleason

<u>Grade</u>	<u>Description</u>
Grade 1	Small, uniform glands with minimal nuclear changes
Grade 2	Medium-sized acini, still separated by stroma but more closely arranged.
Grade 3	The most common finding in prostate cancer biopsies. Marked variation in glandular size and organization, infiltration of stromal and neighboring tissues.
Grade 4	Markedly atypical cells with extensive infiltration into surrounding tissues.
Grade 5	Sheets of undifferentiated cancer cells.

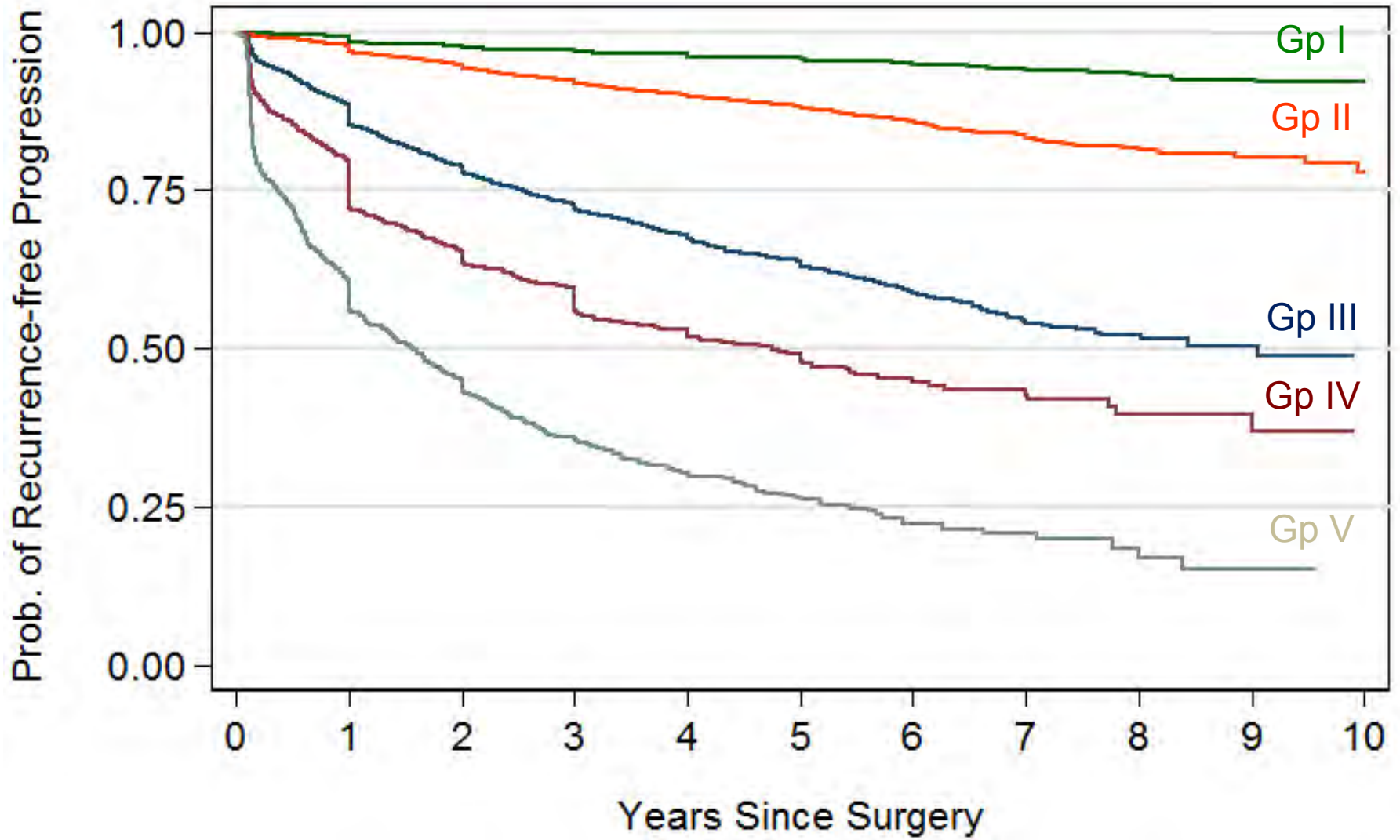


Gleason Score = most frequent grade + 2nd most frequent grade

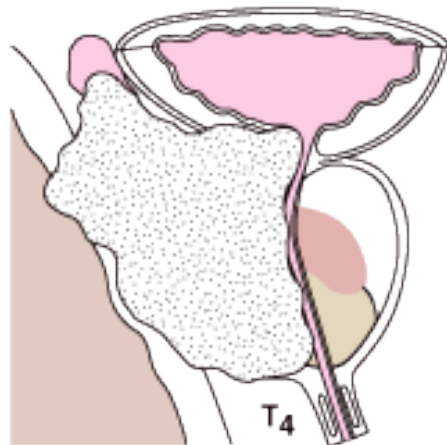
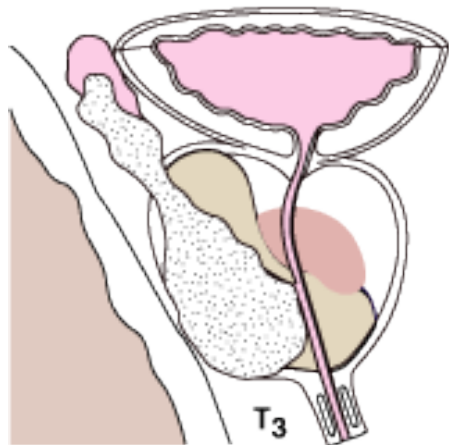
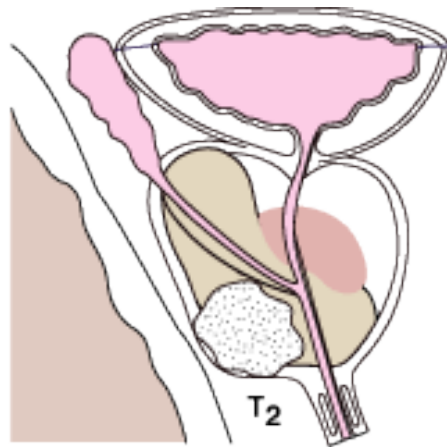
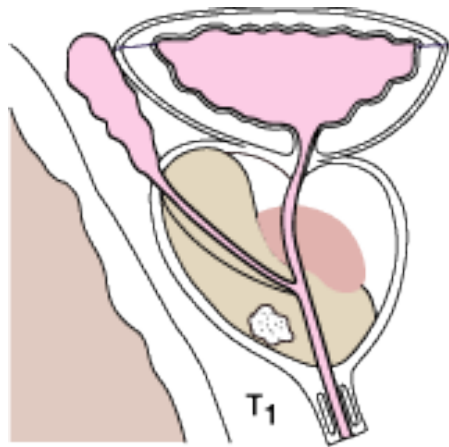
A Contemporary Prostate Cancer Grading System

			<p>Gleason patterns 1-3 distinct, discrete, individual glands</p>	<p>Gleason score ≤ 6</p>	<p>Grade group I</p>
			<p>Gleason pattern 4 fused, cribriform, or poorly-formed glands, or glomerularion</p>	<p>Gleason score 3+4=7</p> <p>Gleason score 4+3=7</p>	<p>Grade group II</p> <p>Grade group III</p>
			<p>Gleason pattern 5 comedo necrosis, cords, sheets, solid nests, single cells</p>	<p>Gleason score 4+4=8 3+5=8 5+3=8</p>	<p>Grade group IV</p>
			<p>Gleason score 4+5=9 5+4=9 5+5=10</p>	<p>Grade group V</p>	

A Contemporary Prostate Cancer Grading System



TNM Staging Prostate Cancer: Tumor



 Tumour tissue

T₁ Clinically unapparent tumor not palpable or visible by imaging

T1a: Tumor incidental, found in $\leq 5\%$ of resected tissue

T1b: Tumor incidental, found in $>5\%$ of resected tissue

T1c: Tumor identified by needle biopsy (because of high PSA)

T₂ Tumor confined within the prostate gland

T2a: Tumor involves one lobe

T2b: Tumor involves both lobes

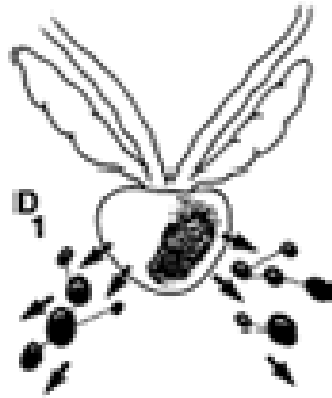
T₃ Tumor extends through prostatic capsule

T3a: Extracapsular extensions (unilateral or bilateral)

T3b: Tumor invades seminal vesicles

T₄ Tumor invades adjacent structures other than seminal vesicles: bladder neck, external sphincter, rectum, levator muscles and/or pelvic wall

TNM Staging Prostate Cancer: Lymph Node Status



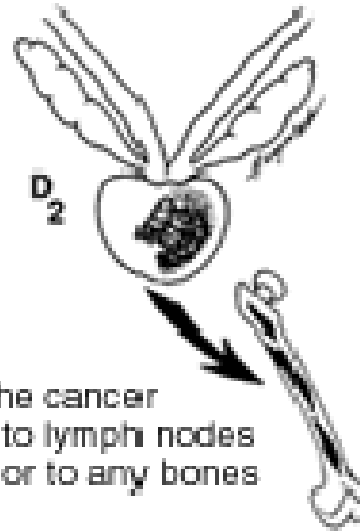
Stage D1 (N+): The cancer has metastasized to the lymph nodes (only in the pelvic area).

Nx: Regional lymph nodes have not been assessed

N0: No regional lymph node metastasis

N1: Regional lymph node metastasis

TNM Staging Prostate Cancer: Distant Metastasis



Stage D2 (M+): The cancer has metastasized to lymph nodes outside the pelvis or to any bones or other organs.

Mx: Distant metastasis has not been assessed

M0: No distant metastasis

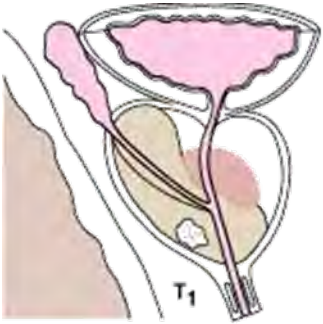
M1: Distant metastasis

M1a: Non-regional lymph nodes

M1b: Bone

M1c: Other sites

Primary Treatment Options



Localized disease

Curative intent
(radical therapy)

Radiotherapy

Surgery

External beam
therapy

Brachytherapy

Open
prostatectomy

Laparoscopy
prostatectomy

Robotic
Laparoscopy
prostatectomy

Active
surveillance

Monitor the
course of
the disease
PSA every 6
months

High cure rates in low-intermediate risk diseases

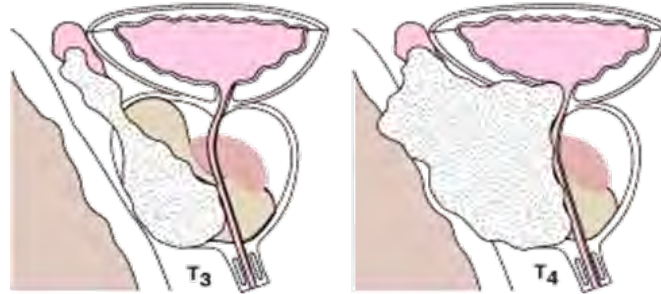
~ 50% impotence rates
10% urgency incontinence

~ 50% impotence rates
5 - 10% stress incontinence

Prostate cancer treatment
inconsistencies found in
Canada

[CBC News](#) Nov 02, 2015

Primary Treatment Options



Disseminated disease

Surgery/
radiotherapy

First line

Hormone therapy

First line

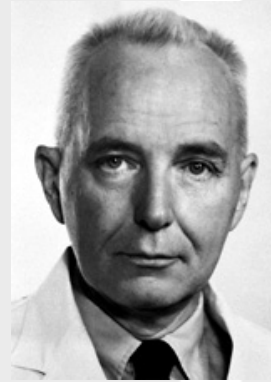
Chemotherapy

Second line

Target Therapy

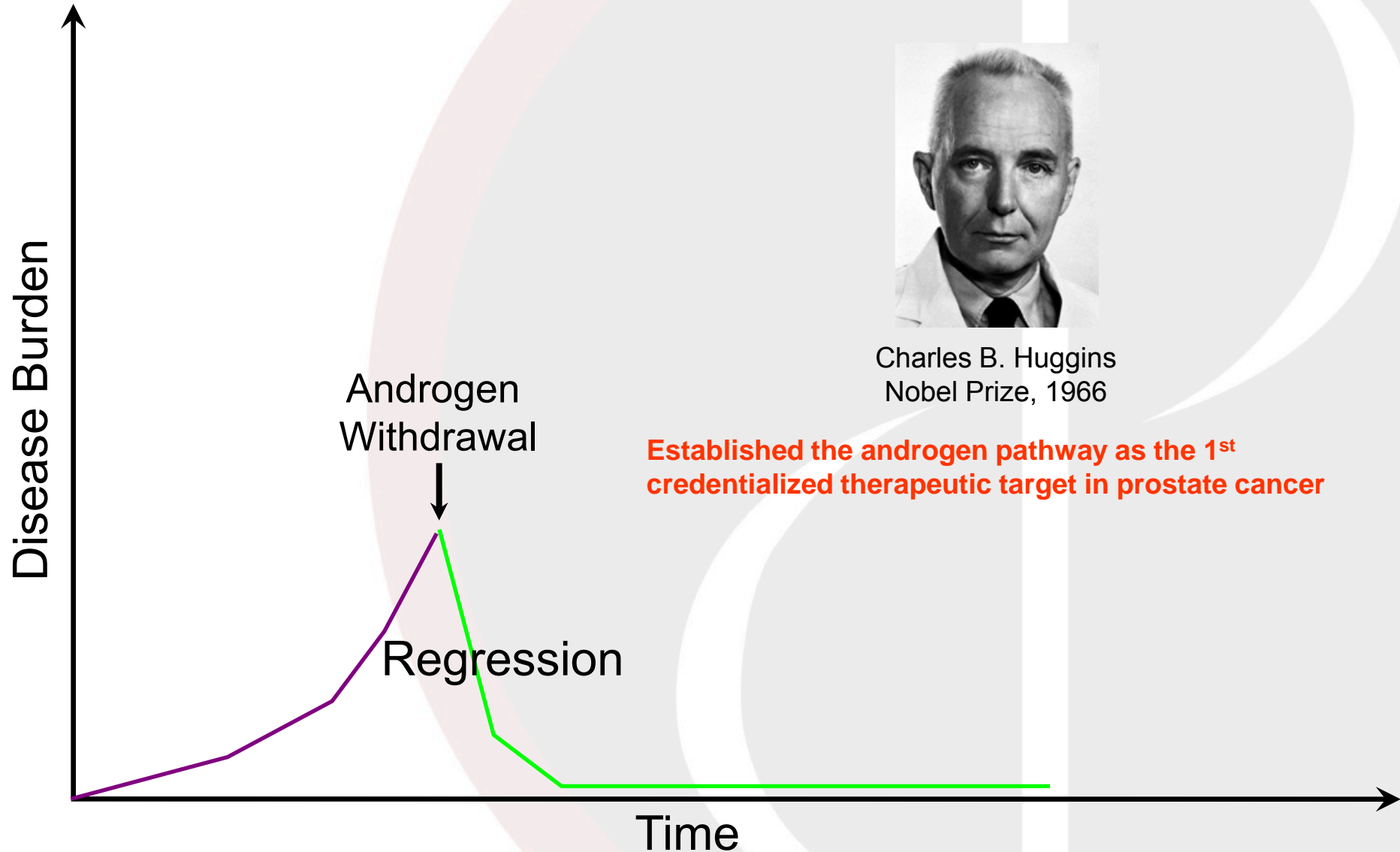
Second/Third line

Androgens Regulate Prostate Cancer

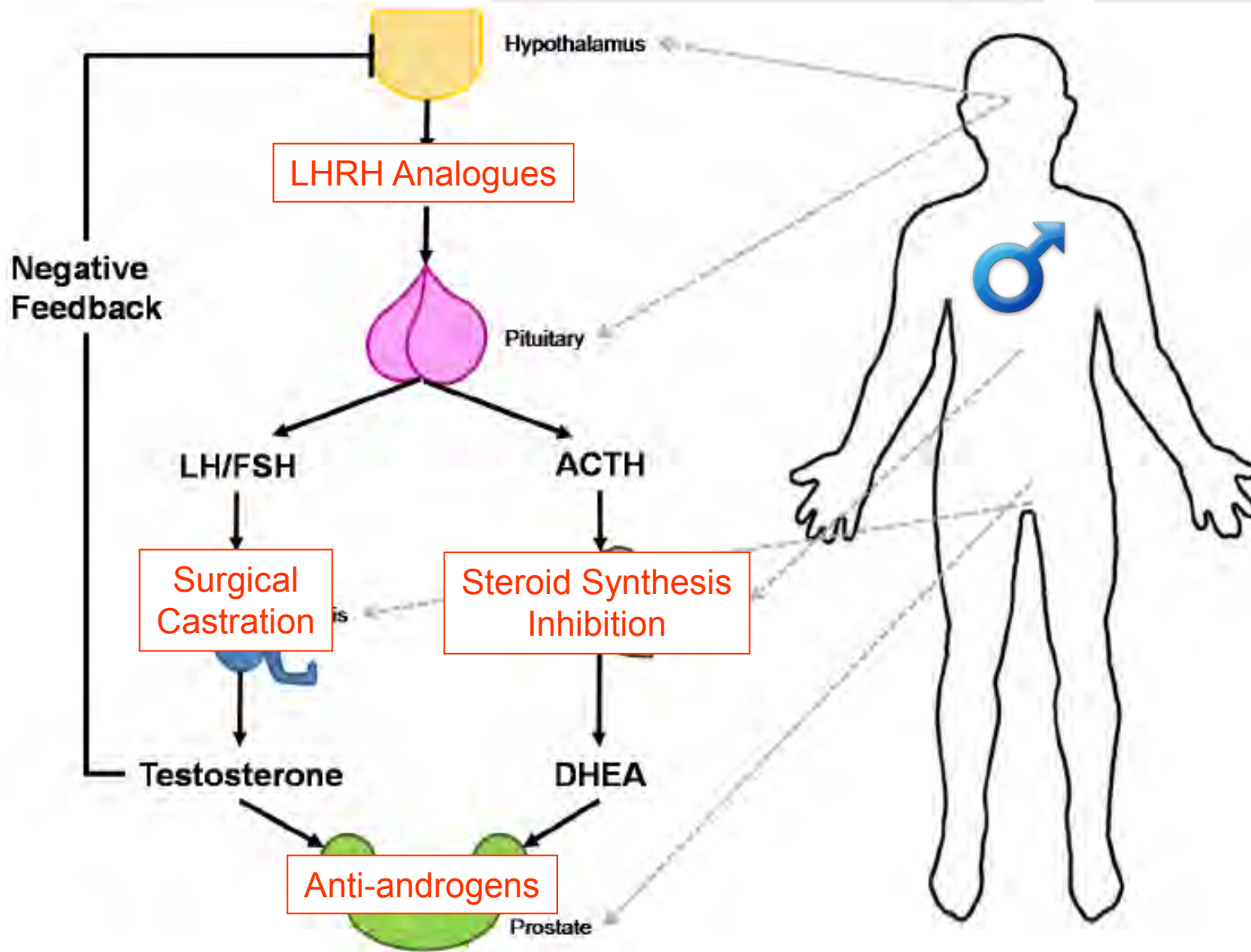


Charles B. Huggins
Nobel Prize, 1966

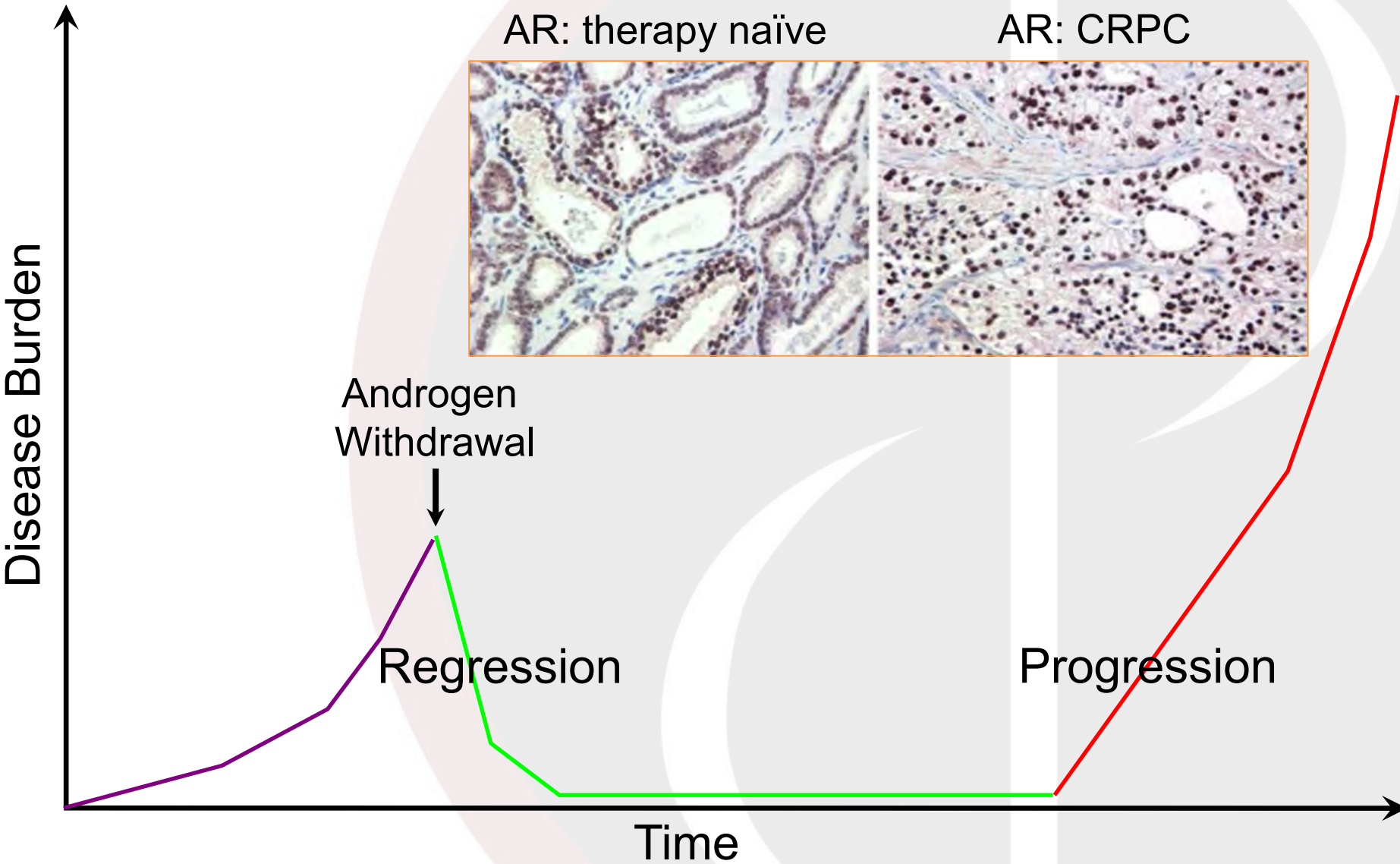
Established the androgen pathway as the 1st credentialized therapeutic target in prostate cancer



Androgen Pathway Targeting

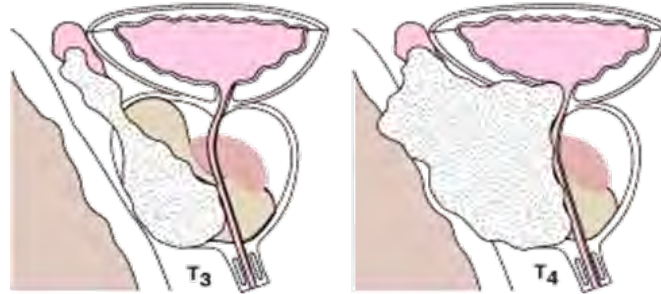


Castration-resistant Progression of Prostate Cancer



AR retention is a characteristic of prostate cancers, and it continues to play a pivotal role in maintaining the castration-resistant phenotype.

Secondary Treatment Options



Disseminated disease

Surgery/
radiotherapy

First line

Hormone therapy

First line

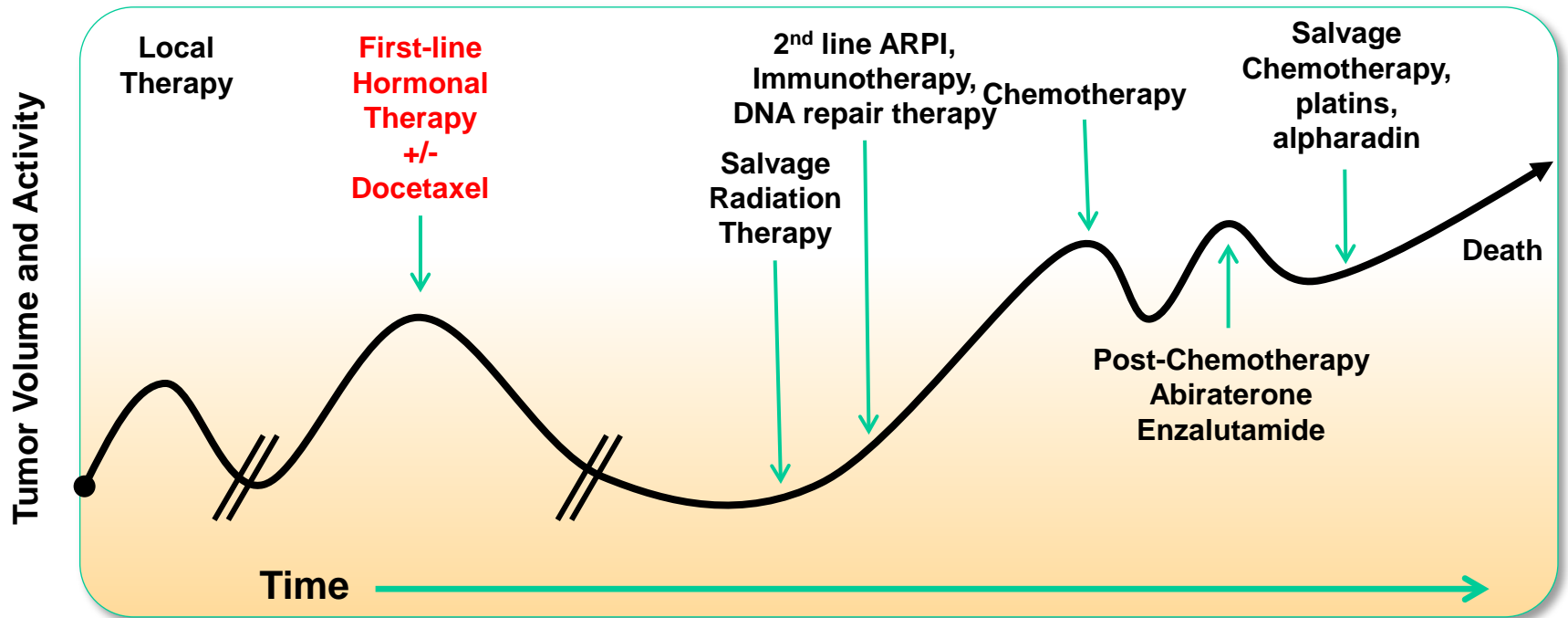
Chemotherapy

Second line

Target Therapy

Second/Third line

Prostate Cancer: Targeting Clinical States



Current Therapies for Advanced Prostate Cancer:

*Enzalutamide (Xtandi), Apalutamide (Erleada), Nilutamide (Nilandron/Anandron) anti-androgens
Abiratarone (Zytida), a CYP 17 inhibitor with anti-androgen activity*

Alpharadin (Xofigo), Radium 223

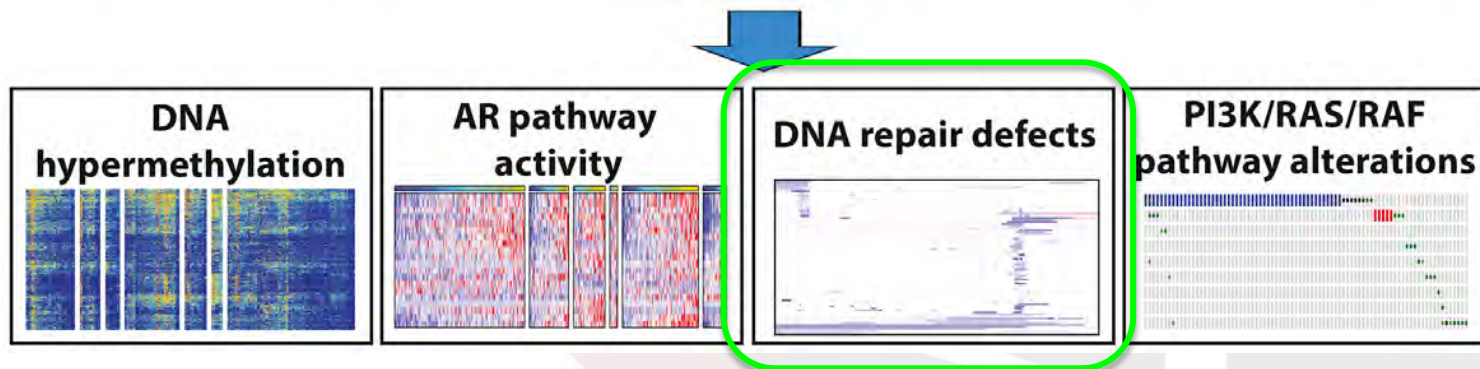
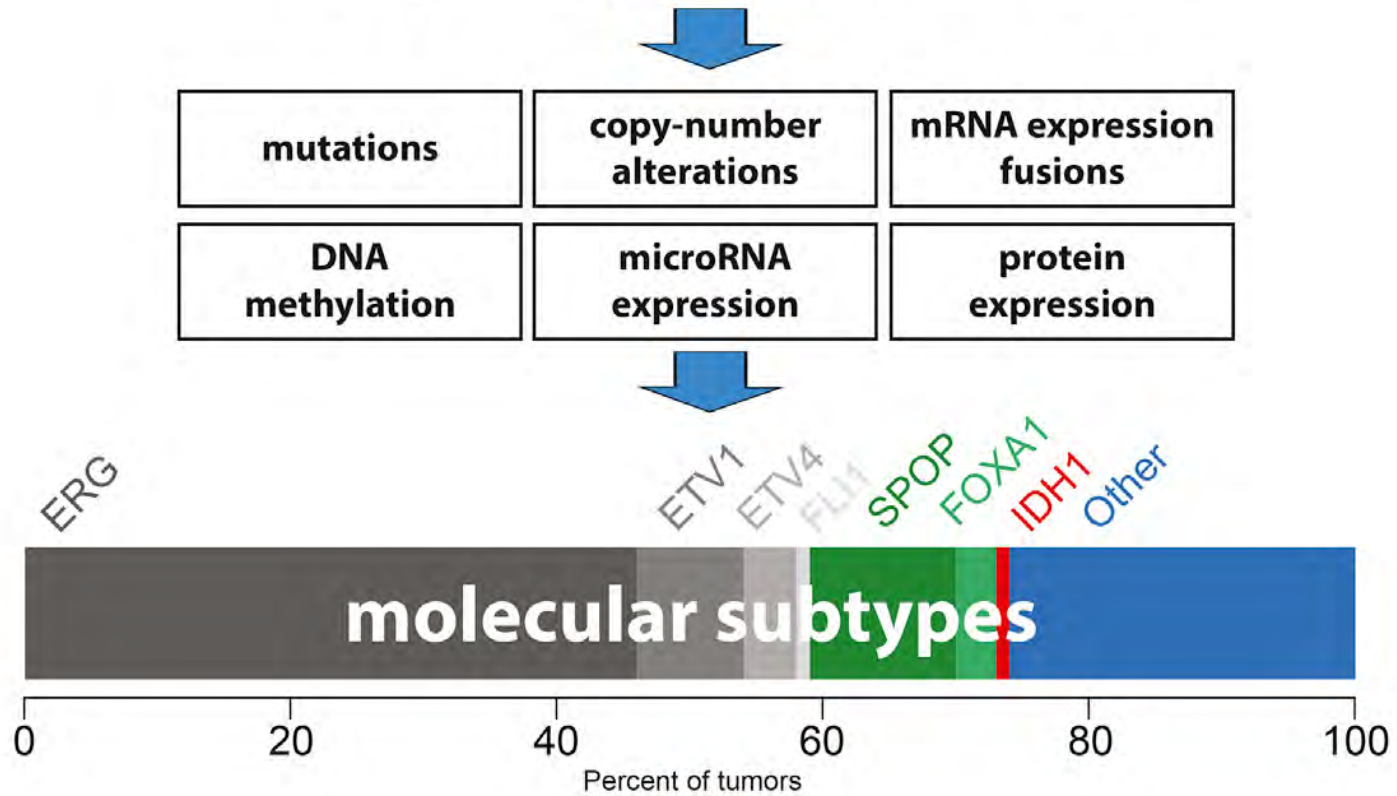
Sipuleucel-T (Provenge), immunotherapy

Cabazitaxel (Jevtana), a second line taxane for MDR PCa

Olaparib (Lynparza), Rucaparib (Rubraca), PARP inhibitors

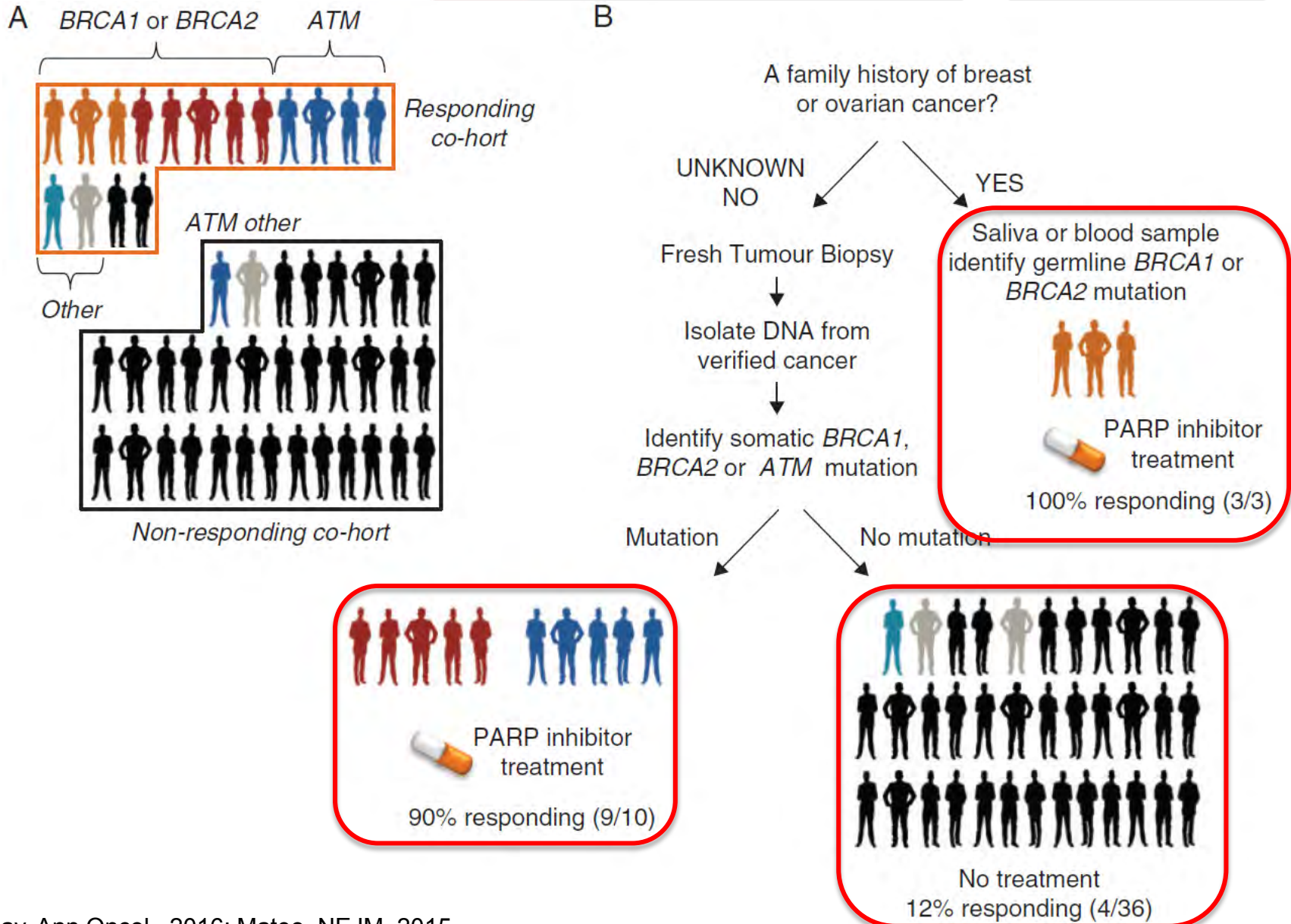
Molecular Taxonomy of Primary PCa

333 primary prostate cancers

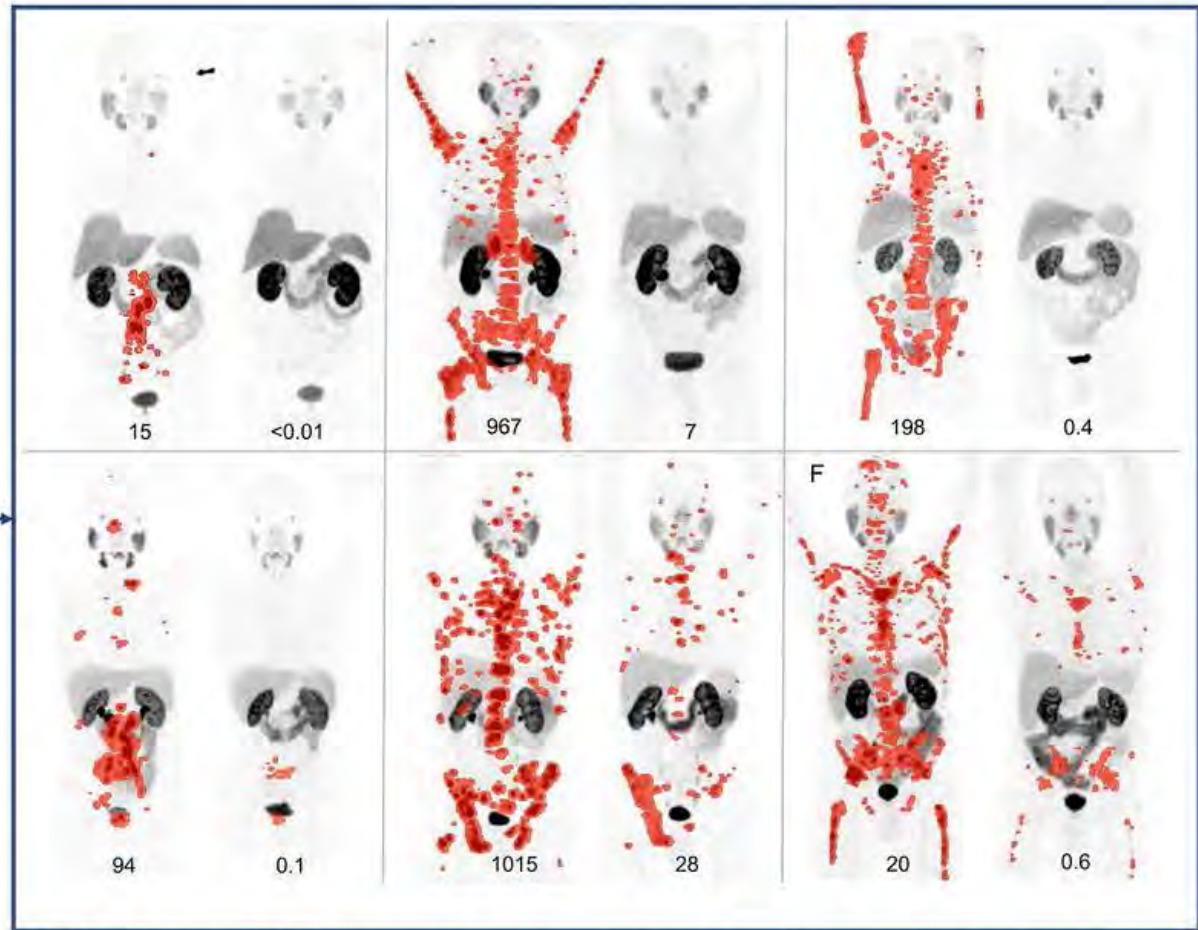
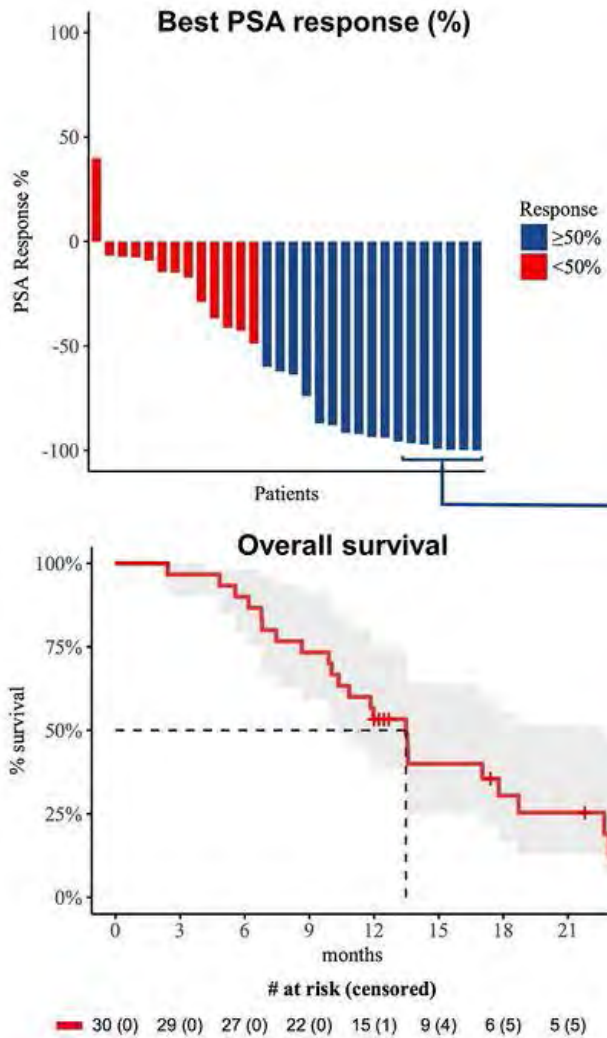


Olaparib

FDA Breakthrough Therapy Designation for CRPC

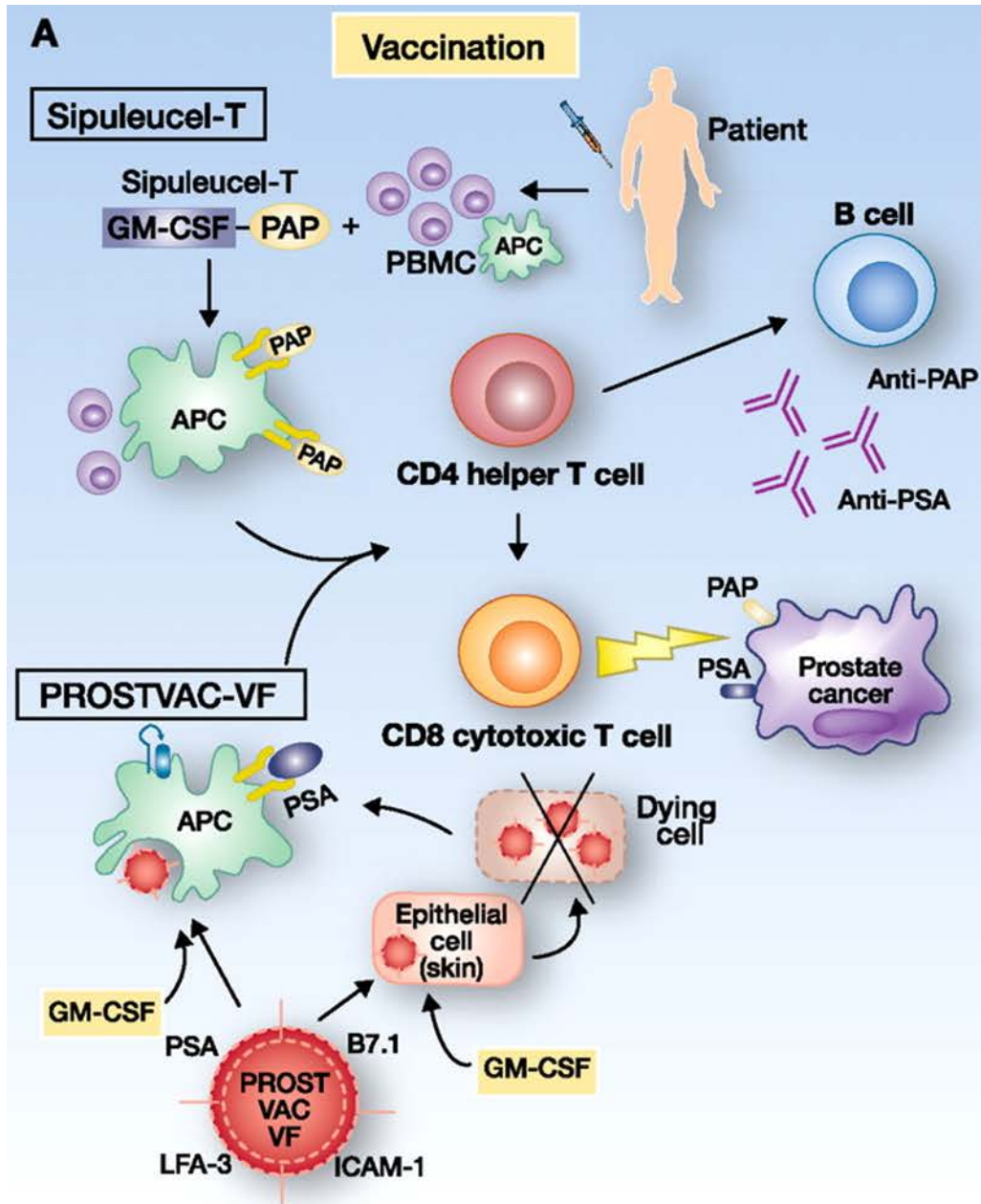


PSMA-targeted “Theranostics”

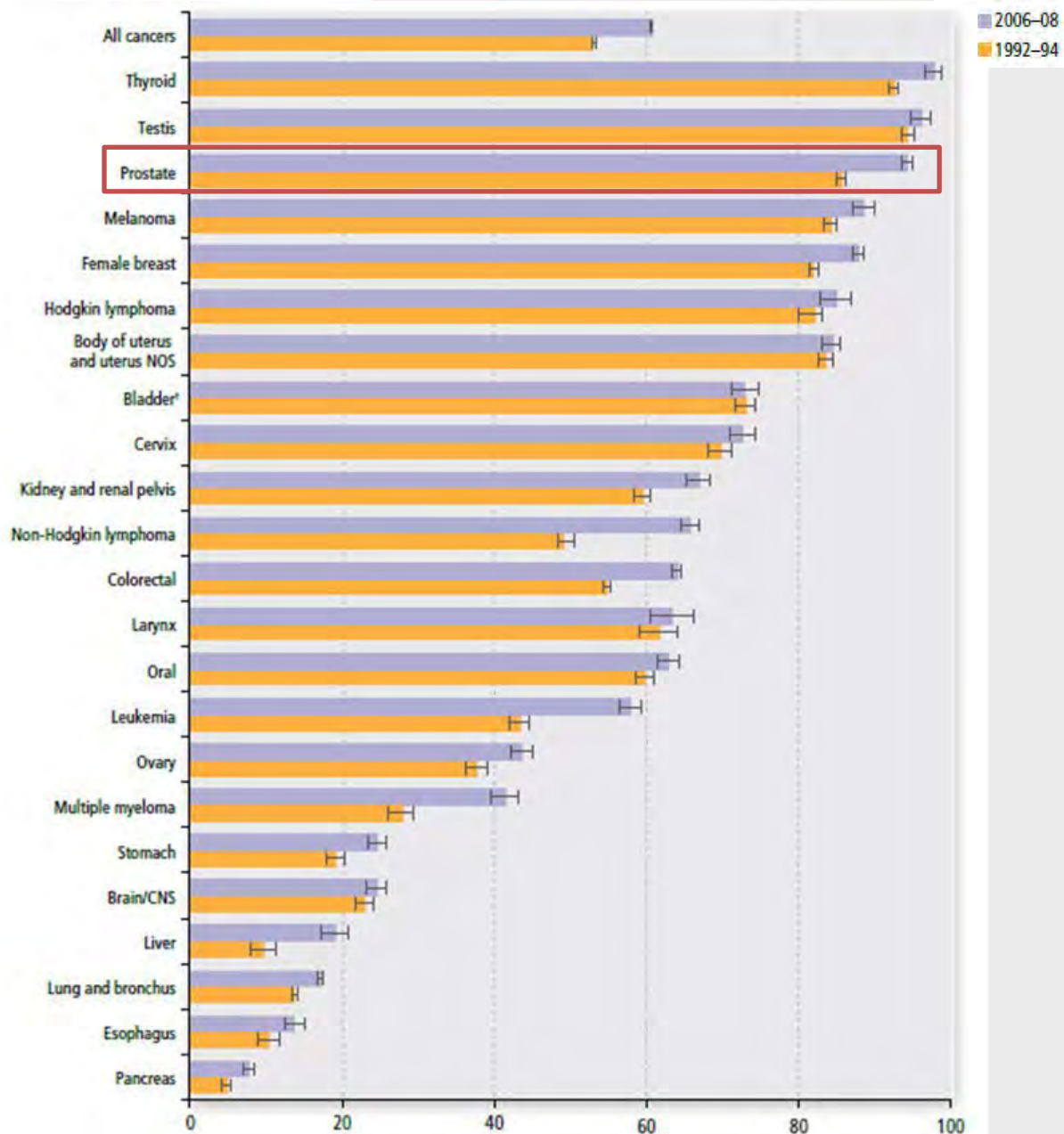


^{68}Ga -PSMA11 PET maximum intensity projection (MIP) images at baseline and 3 months after ^{177}Lu -PSMA617 in 6 patients with PSA decline $> 98\%$. Any disease with SUVmax over 3 in red.

Prostate Cancer Immunotherapy



5 Year Net Cancer Survival



Prostate Health and the Aging Man

RECOGNIZE the Common Underlying Risk Factors:

- Smoking
- Diet
- Exercise
- Obesity
- Illicit Drugs
- Occupational
- High BP
- Lipids
- Diabetes





Campaigns and Resources

DONTCHANGEMUCH.ca
Where guys go to get healthy



YOUCHECK.CA
The helpful health tool for men.



Don't Change Much

Don't Change Much is a health resource inspiring men and their families to lead healthier lives. With reliable information and easy tips, we know every guy and their family can make small changes that will have a big impact on their health.

[VISIT DONTCHANGEMUCH](#)

You Check

YouCheck is a world first helpful health tool for men – a health awareness tool built specifically for men. Take your first step in making small changes that lead to big time benefits over the long haul. It's free and 100% confidential.

[GET YOUCHECKED](#)

Canadian Men's Health Week

Join Canadians from coast to coast to coast in the goal of improving men's and family health in Canada. Canadians believe they're a pretty healthy nation. But weirdly, Canadian guys aren't that healthy. It's not because of genetics; it's a result of lifestyle.

[CELEBRATE](#)




Find a
Support Group
Near You.

PCC Spotlight

[Dream car draw a win for all Ontarians affected by prostate cancer](#)

February 22, 2019 – TORONTO, ON – A dream came true today for Harold Mutter (ticket #19273), the lucky winner of a 2018 Acura NSX valued at more than \$235,000 – the prize for Prostate Cancer Canada's seventh Rock the Road Raffle. [More →](#)

[Researchers discover common markers of tumour hypoxia across 19 cancer types](#)

Landmark pan-cancer study analyzes mutation signatures of low oxygen in more than 8,000 tumours. [More →](#)

[Rock the Road Raffle returns with its most valuable car to date](#)

A 2018 Acura NSX to be prized by Prostate Cancer Canada and TADA at the AutoShow. [More →](#)




Men living with prostate cancer
URGENTLY NEED YOUR SUPPORT.
DONATE NOW!




Expert Angle Webinars

Prostate Cancer Information Service



Community Events
Get Involved



Tom is dealing with prostate cancer. The waiting. The treatments. The side effects.
What would you do in his place? Watch these videos to map out a strategy that will work for you.

IF I WERE TOM

Get Started ▶

Choose Scene ▾



CUT TO THE CHASE



FIRST THINGS TO KNOW

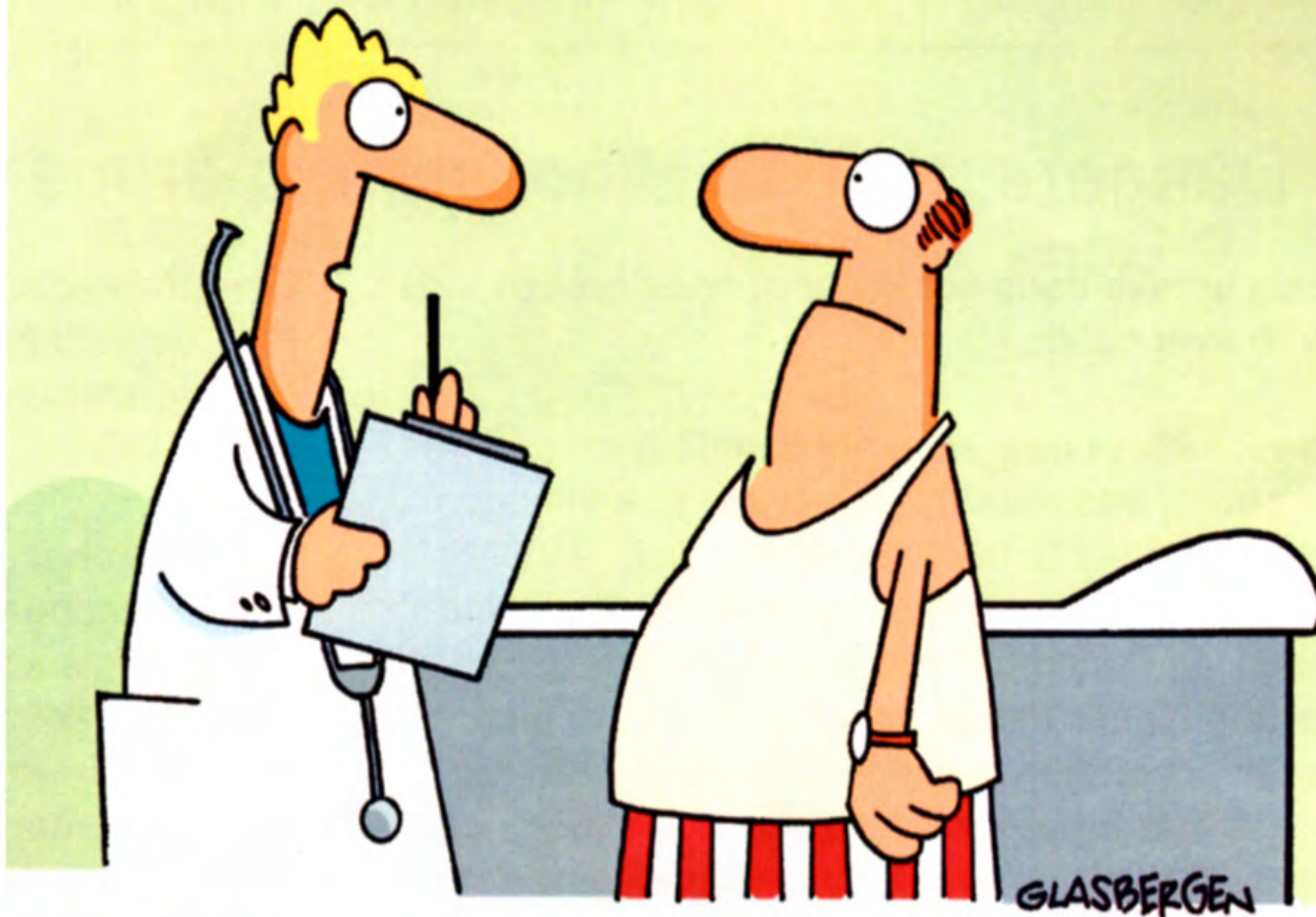


TREATMENTS AND SIDE EFFECTS



LIVING WITH PROSTATE CANCER

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“What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?”

Exercise and PCa

Harvard Health Professionals Study (JAMA 2011)

- Men over age 65 who exercised vigorously (more than 3 hours per week) had a 35% decrease in death rate from all causes and a 70% decrease in risk of developing high grade, advanced or fatal PCa
- No associations were shown in younger men ??

Exercise and PCa

Durham VA Study (Banez et al, Cancer, 2013)

n = 307 (164 white; 143 black)

- white men in their 60's who were moderately or highly active were 53% less likely to develop PCa
- no similar link seen in the black men ???

Physical Activity: Give me 30 minutes/day and I will give you...

- | <u>Physical health</u> | <u>Mental Health</u> |
|--|----------------------|
| • Premature death= 30-50% | -Depression |
| • Heart disease= 40-50% | |
| • Stroke= 30-50% | |
| • Type II diabetes= 30-40% | |
| • Breast cancer= 20-30% | |
| • Colon cancer...= 30-50% | |
| • Osteoporosis= 40-50% | |
| •(Manson J, Amend P. The 30-minute fitness solution, 2002.) | |

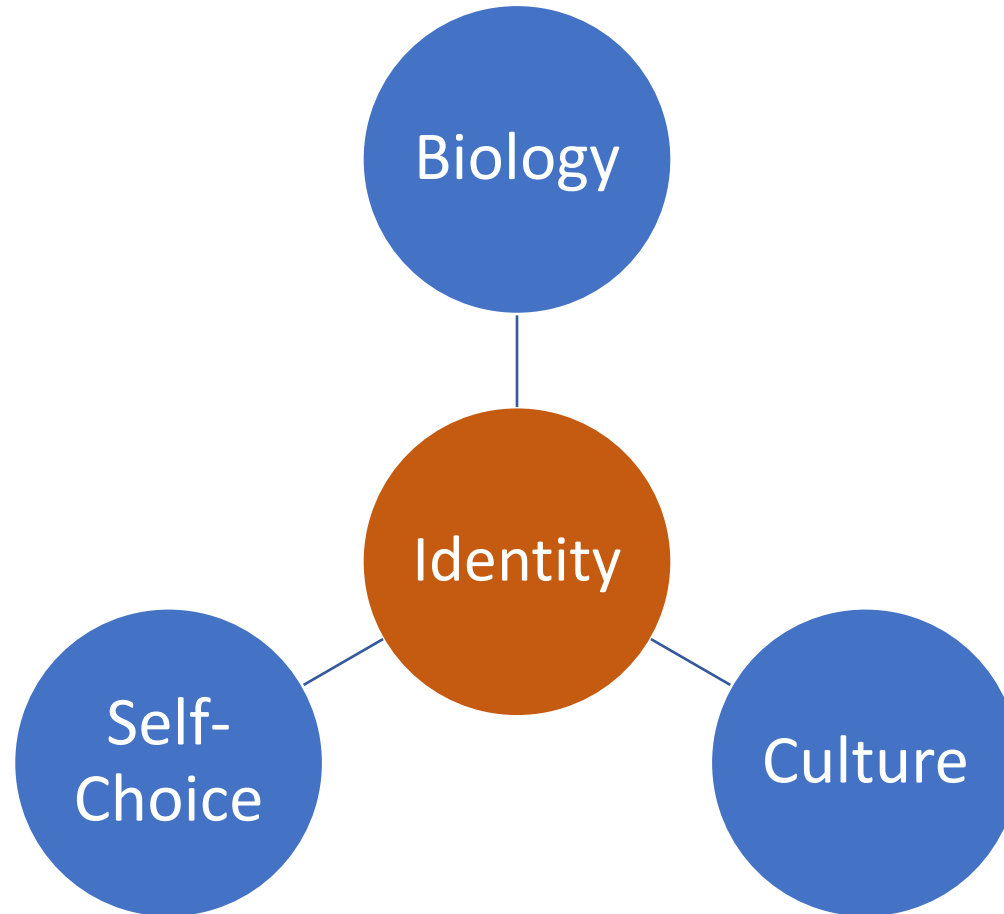
Critical issues in men's mental health

Dan Bilsker PhD

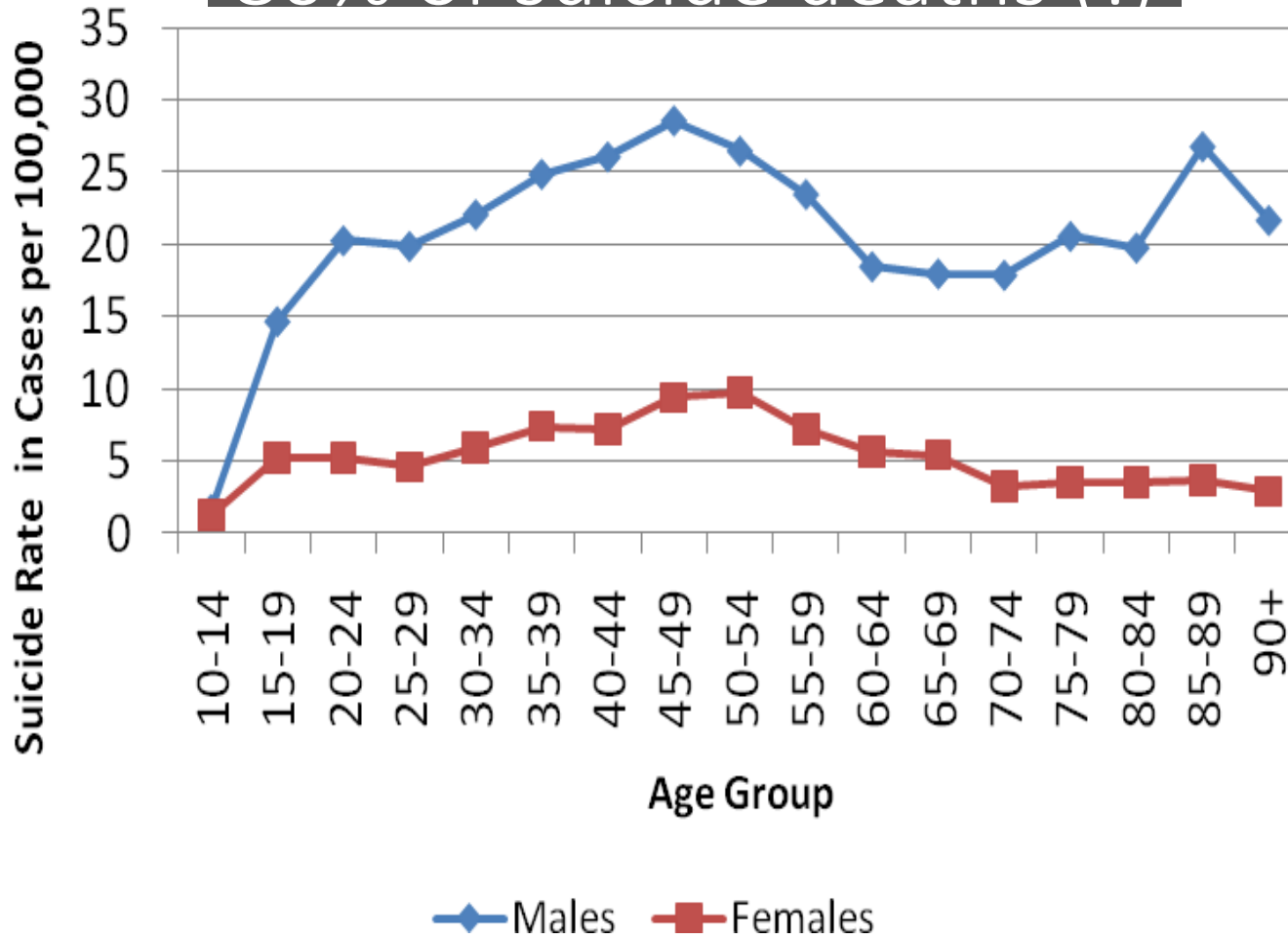
Clinical Assistant Prof.

Dept. of Psychiatry, UBC

Sources of Male Identity

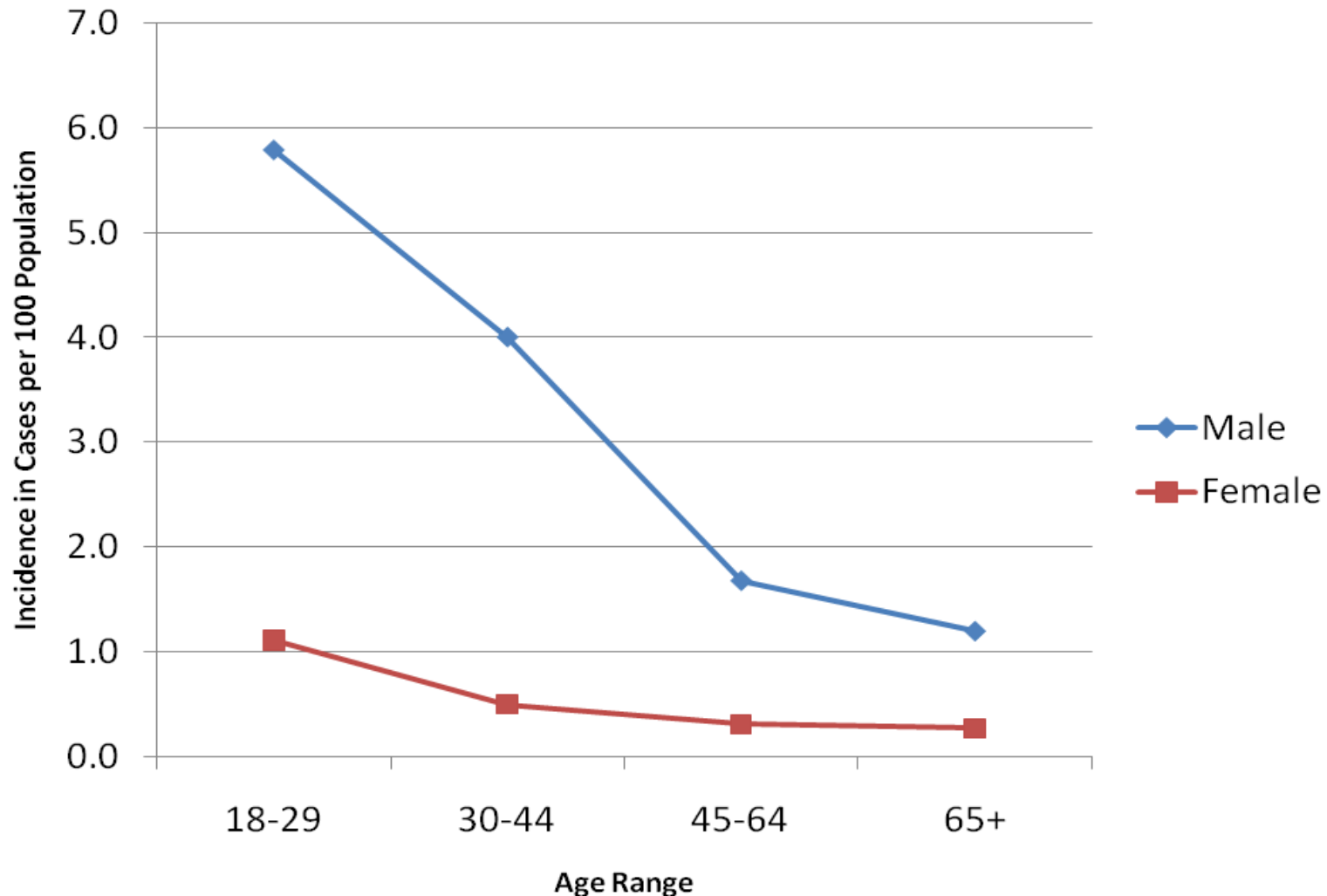


High incidence of male
suicide
80% of suicide deaths (!)



Perplexing nature of male
depression

Alcohol use disorder (80% men!)



Underutilization of psychological treatment

Men's coping with psychological suffering

Drink

Deny

Isolate

Get Angry

Clinical Responses

Reflect on your
own assumptions

Don't confuse
affect with
suffering

Refer to male-
appropriate
therapy

Monitor alcohol
use

Population-Level Responses

Resist
stigmatizing
men

Provide
targeted
services

Fund Research

Enhance men's
coping

Men's Resilient Coping

Balance	Self-Acceptance* REVERSE SCORED	Meaningful Work	Trusted Social Support	Physical Self-Care
<ul style="list-style-type: none">I make time for my personal and family life, even when the job is very demanding	<ul style="list-style-type: none">I'm disapproving and judgmental about my own flaws and inadequacies	<ul style="list-style-type: none">The work that I do fits well with my personal values and beliefs	<ul style="list-style-type: none">I have friends at work I can rely on to support me when I need it.	<ul style="list-style-type: none">I am careful to maintain a good level of physical fitness

Self-care tools

Tool	Search for
Antidepressant Skills Workbook	Same
Managing Anger (in Positive Coping with Health Conditions)	managing anger pchc
Rethinking Drinking	Same