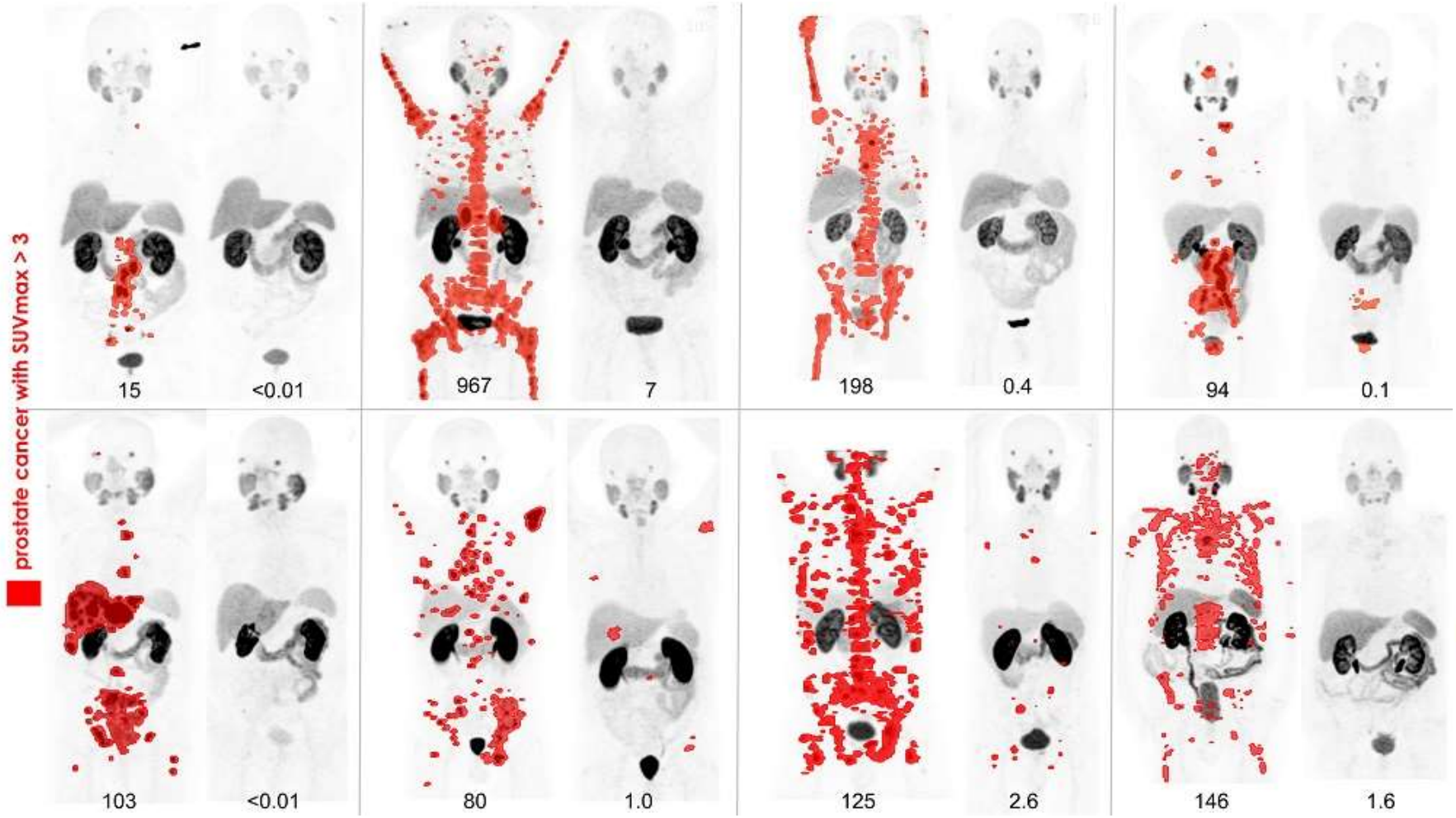
Theranostics

The Foundation of Precision Cancer Care

NEBRASKA CANCER SPECIALISTS

#caringforthegoodlife

Nebraska Cancer Specialists



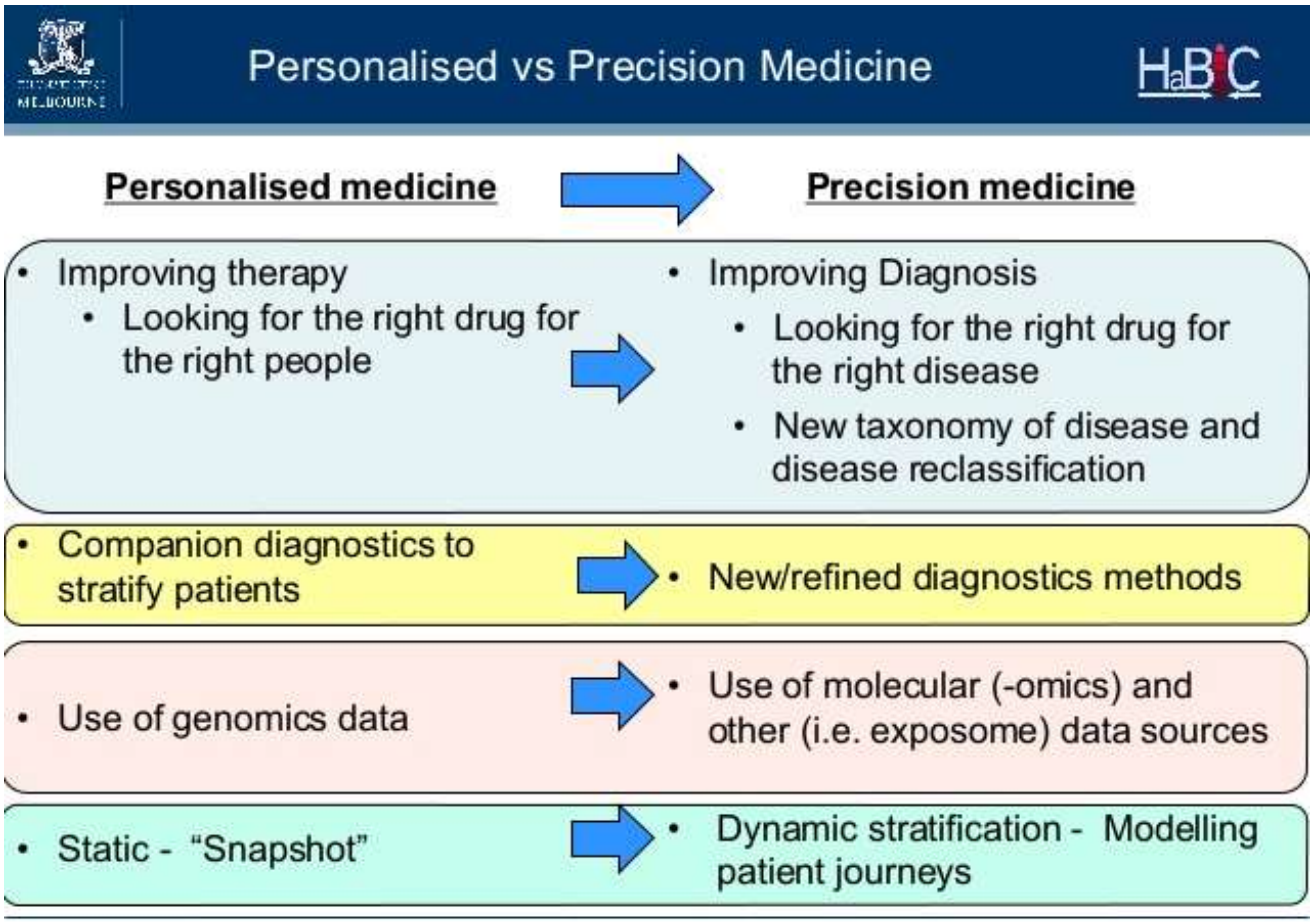
Precision Cancer Medicine

What is Precision cancer medicine

It is an evolving approach to cancer care that aims to leverage new knowledge regarding the pathogenesis of cancer to

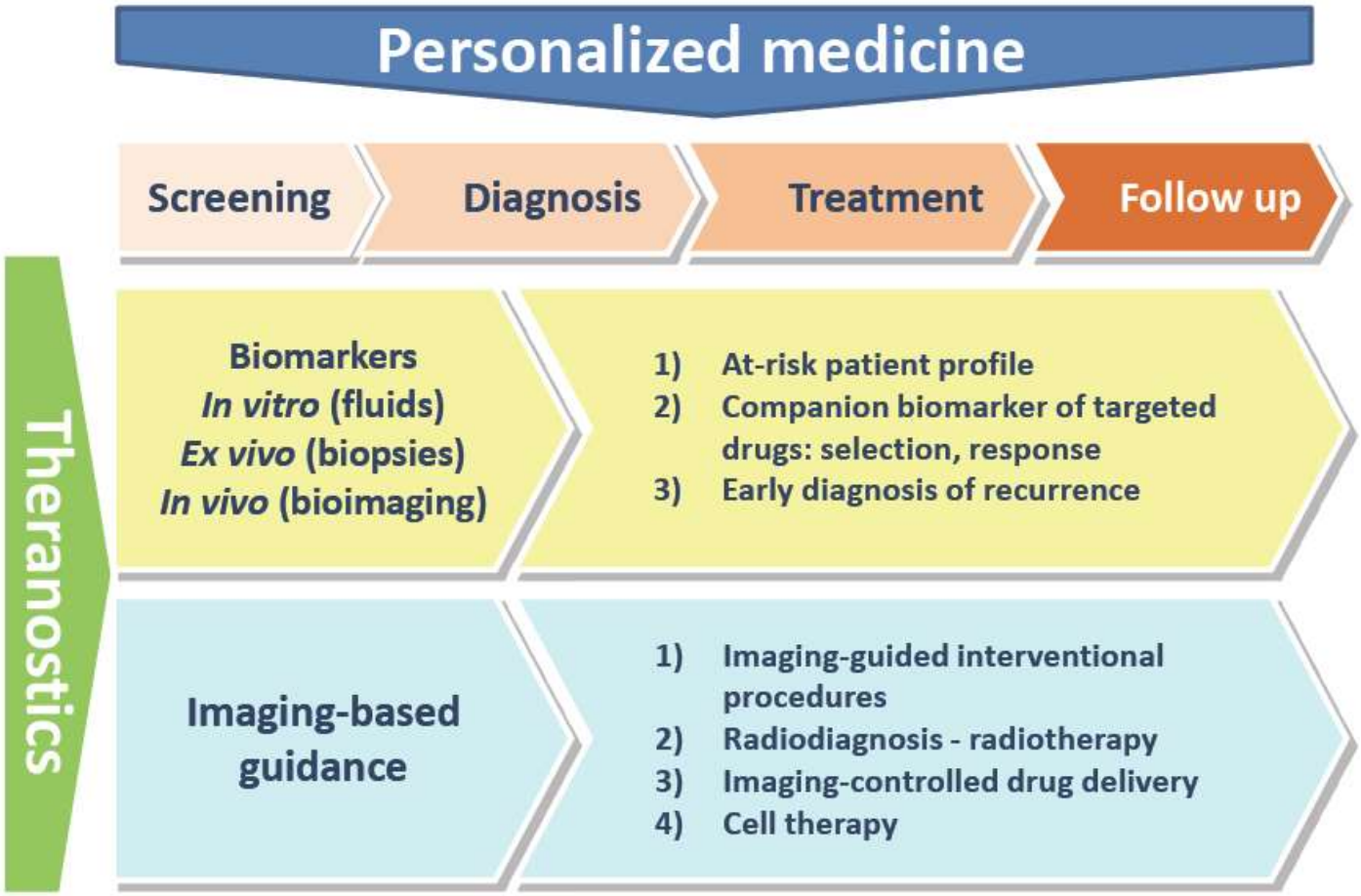
- more precisely target therapy and
- spare normal cells/tissues

Personalized Evolves to Precision

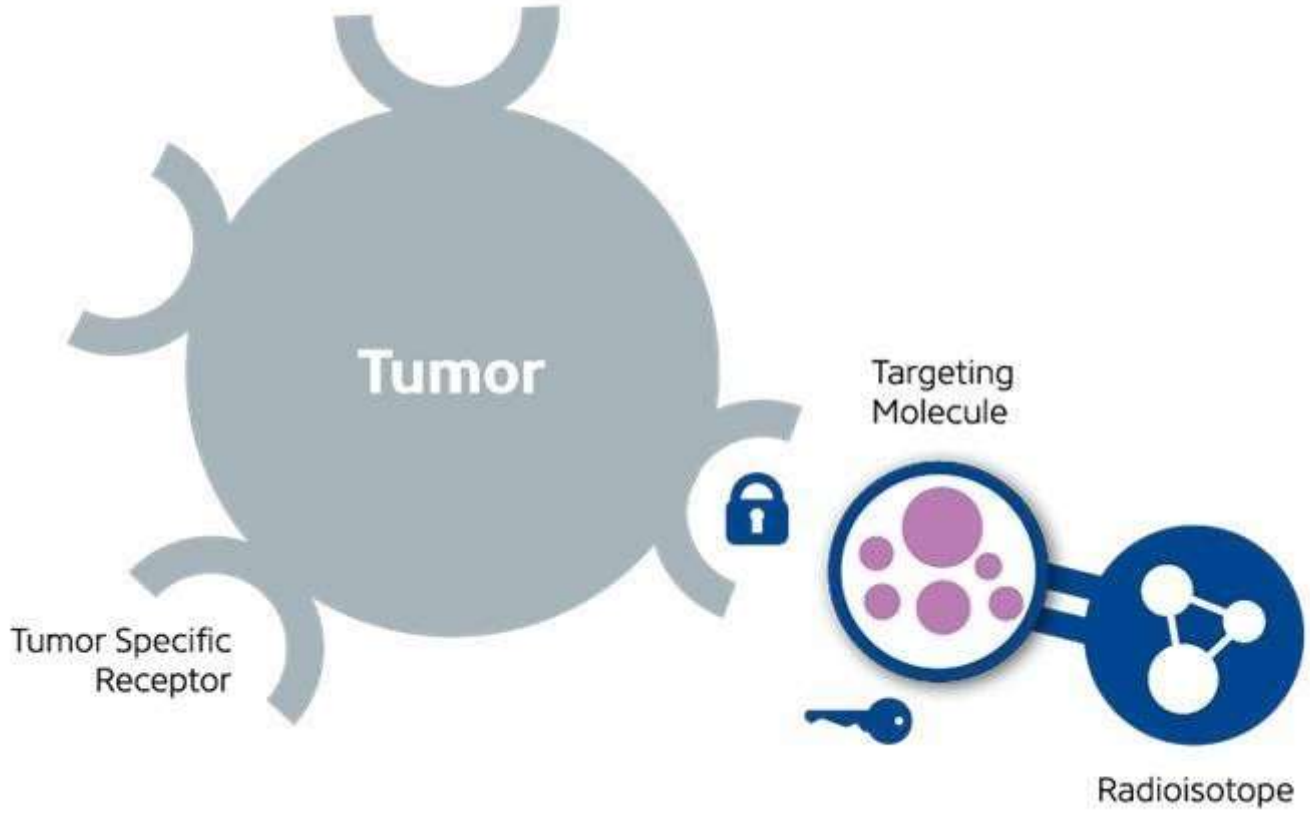


Precision Medicine

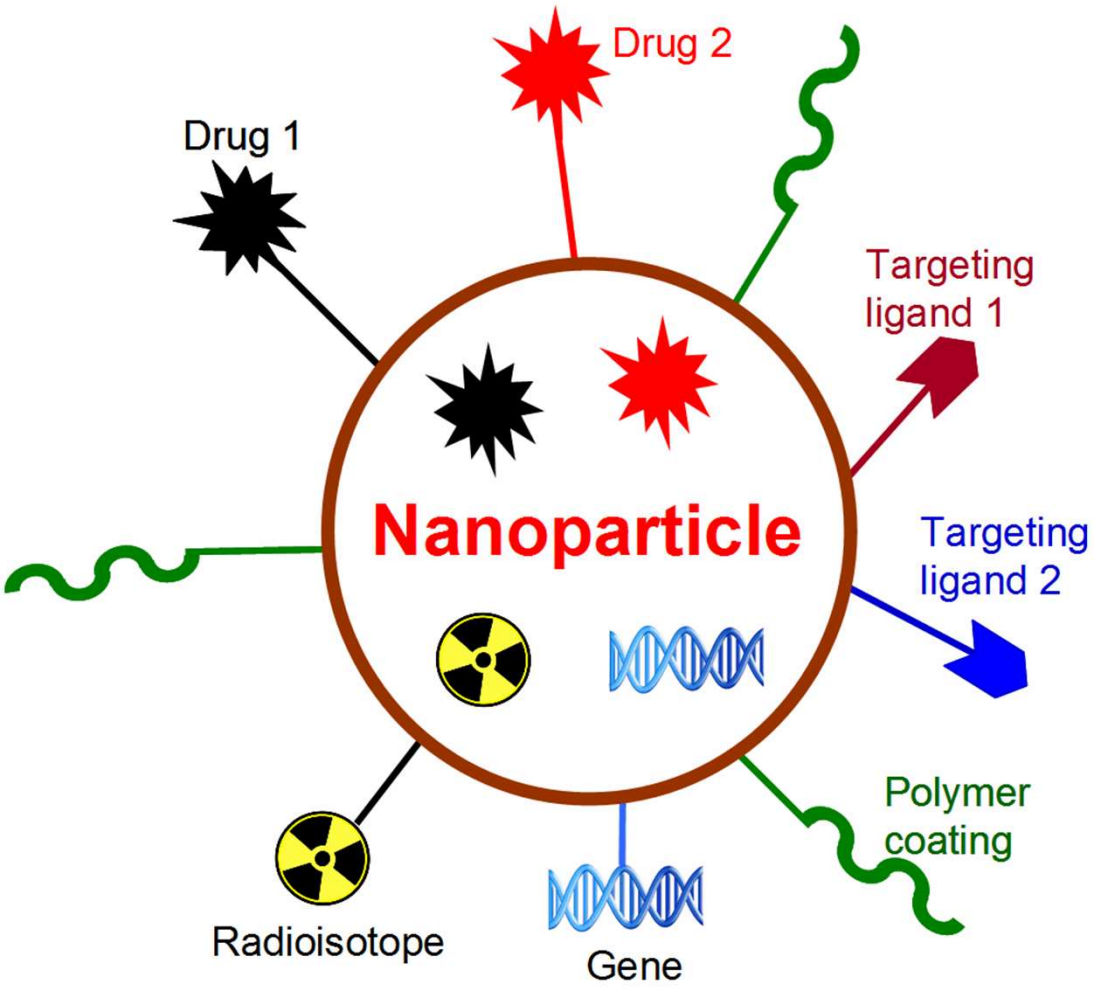
What is Theranostics?



Theranostics: Mechanism



Why is Radio-Targeting Preferred?



Theranostics - 2018

^{177}Lu-Dotatate Significantly Improves Progression-Free Survival in Patients with Midgut Neuroendocrine Tumours: Results of the Phase III NETTER-1 Trial

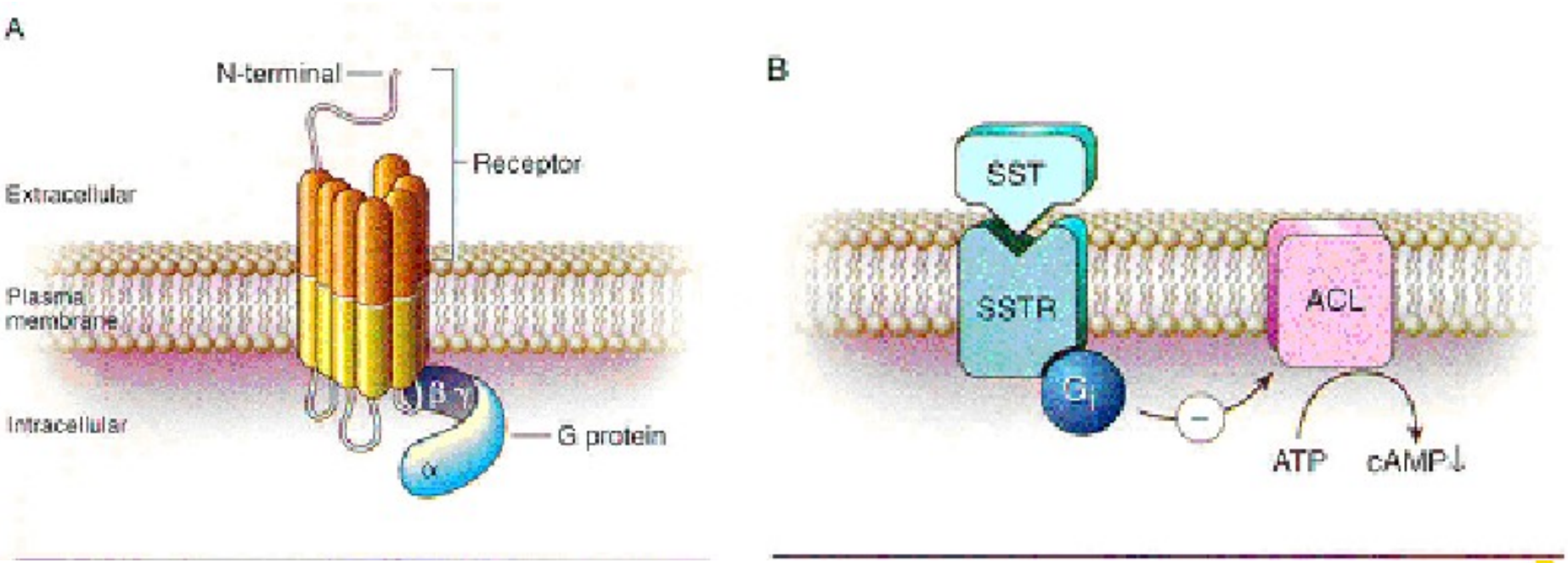
Jonathan Strosberg[1], Edward Wolin[2], Beth Chasen[3], Matthew Kulke[4], David Bushnell[5], Martyn Caplin[6], Richard P. Baum[7], Erik Mittra[8], Timothy Hobday[9], Andrew Hendifar[10], Kjell Oberg[11], Maribel Lopera Sierra[12], Philippe Ruszniewski[13], Dik Kwekkeboom[14] on behalf of the NETTER-1 study group

[1] Moffitt Cancer Center, Tampa, FL 33612, USA;[2] Markey Cancer Center, University of Kentucky, Lexington, KY 40536-0093, USA;[3] University of Texas MD Anderson Cancer Center, Houston, TX 77030, USA;[4] Dana-Farber Cancer Institute, Boston, MA 02215, USA;[5] University of Iowa, Iowa City, IA 52242, USA;[6] Royal Free Hospital, London, United Kingdom;[7] Zentralklinik, Bad Berka, Germany;[8] Stanford University Medical Center, Stanford, CA 94305, USA;[9] Mayo Clinic College of Medicine, Rochester, MN 55905, USA;[10] Cedars Sinai Medical Center, Los Angeles, CA 90048, USA;[11] University Hospital, Uppsala University, Uppsala, Sweden;[12] Advanced Accelerator Applications, New York, NY 10118, USA;[13] Hopital Beaujon, Clichy, France;[14] Erasmus Medical Center, Rotterdam, Netherlands

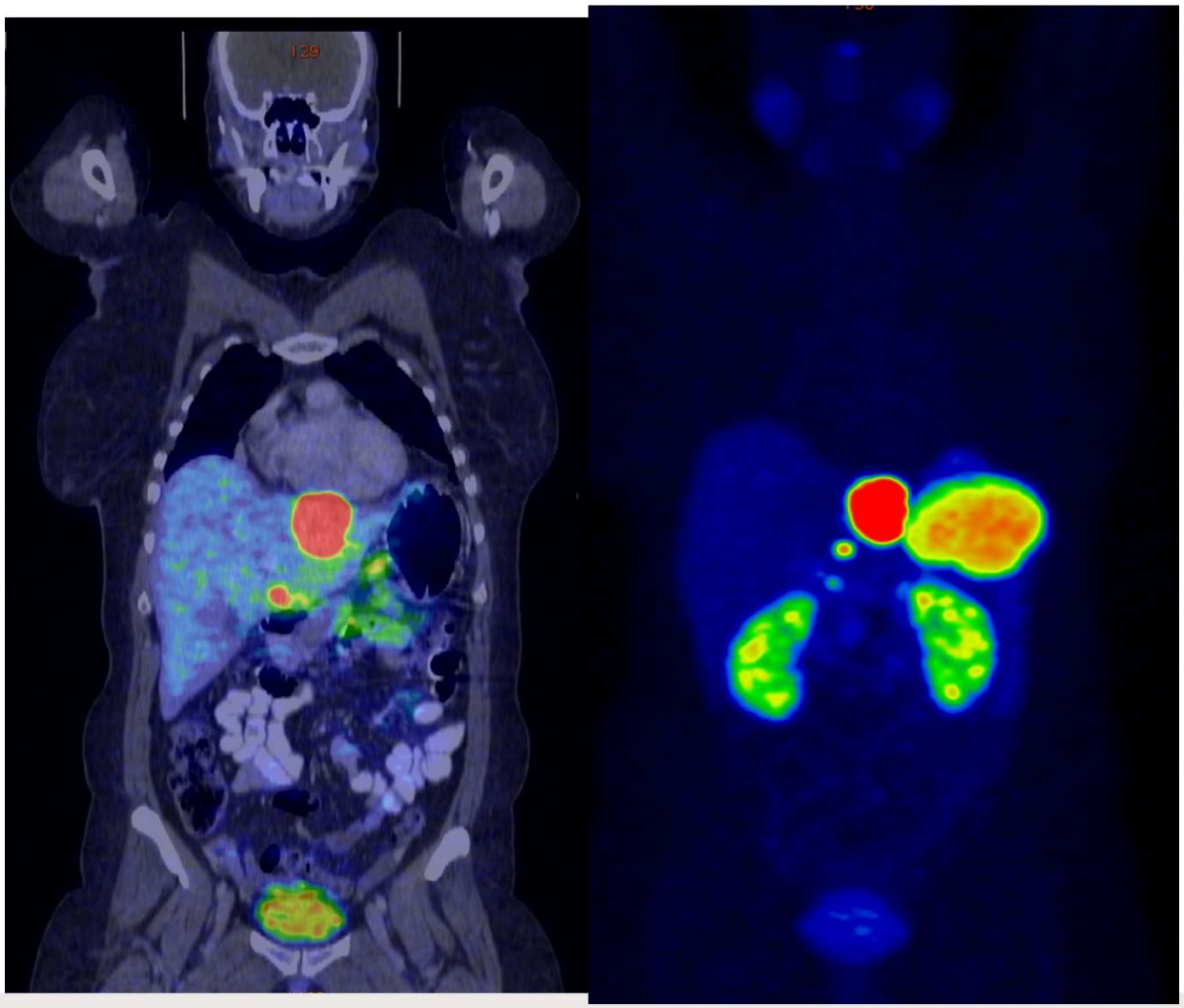
Presentation Presidential Session II of the 18th ECCO – 40th ESMO – European Cancer Congress 2015, 27 September 2015, abstract 6LBA, Vienna

Neuroendocrine Theranostics – DOTATATE

Somatostatin Receptor



Neuroendocrine Theranostics



Neuroendocrine Theranostics: PFS

Progression-Free Survival

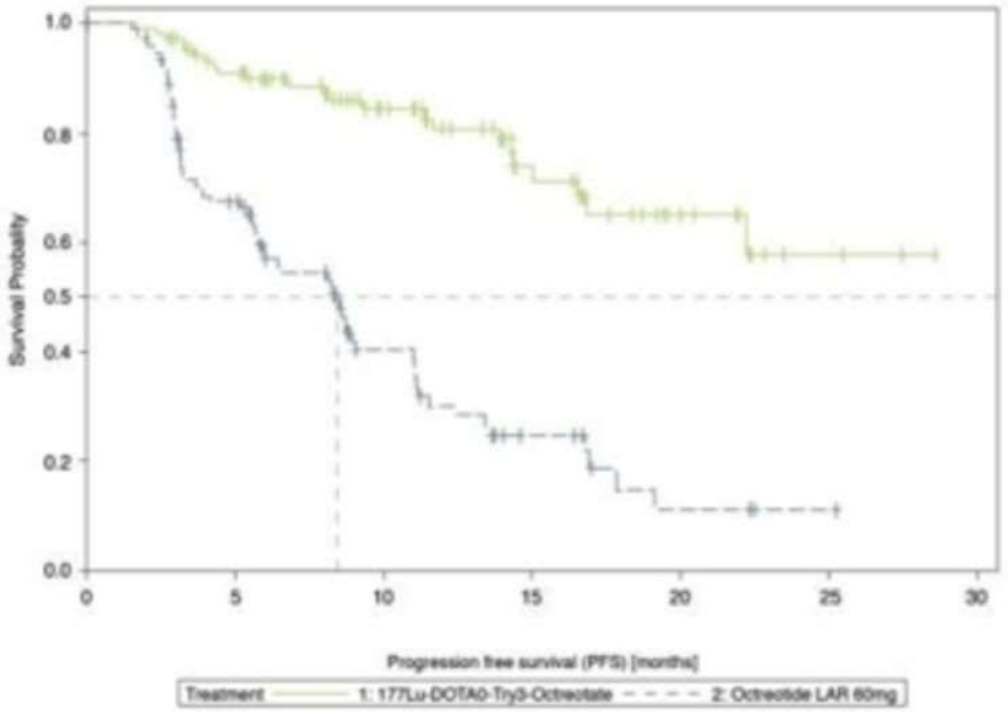
N = 229 (ITT)
Number of events: 90

- ^{177}Lu-Dotatate: 23
- Oct 60 mg LAR: 67

Hazard ratio: **0.21**
[0.129 – 0.338] **p < 0.0001**

79% reduction in the risk of disease progression/death

Estimated Median PFS in the Lu-DOTATATE arm
≈ 40 month

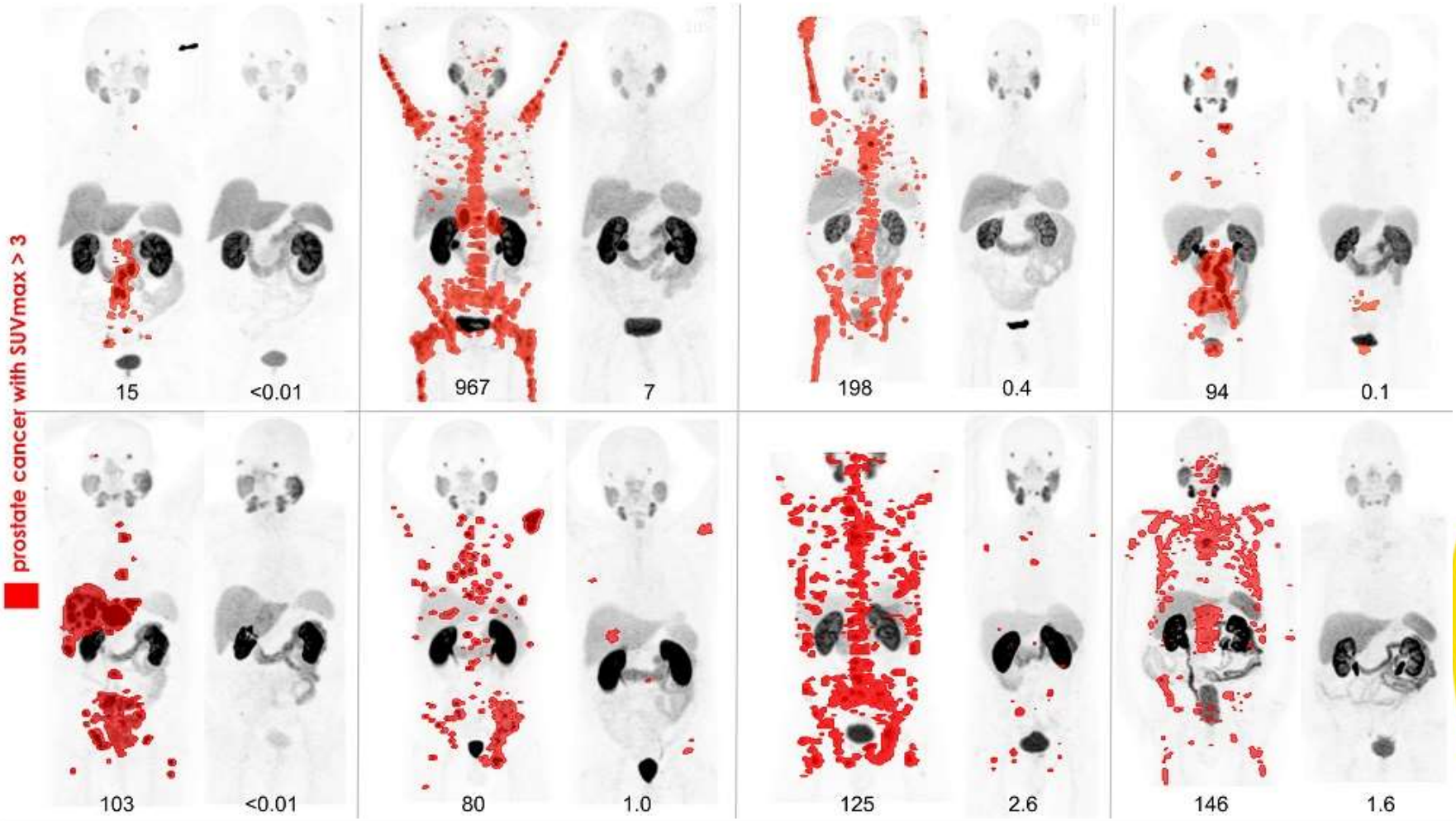


All progressions centrally confirmed and independently reviewed for eligibility (SAP)

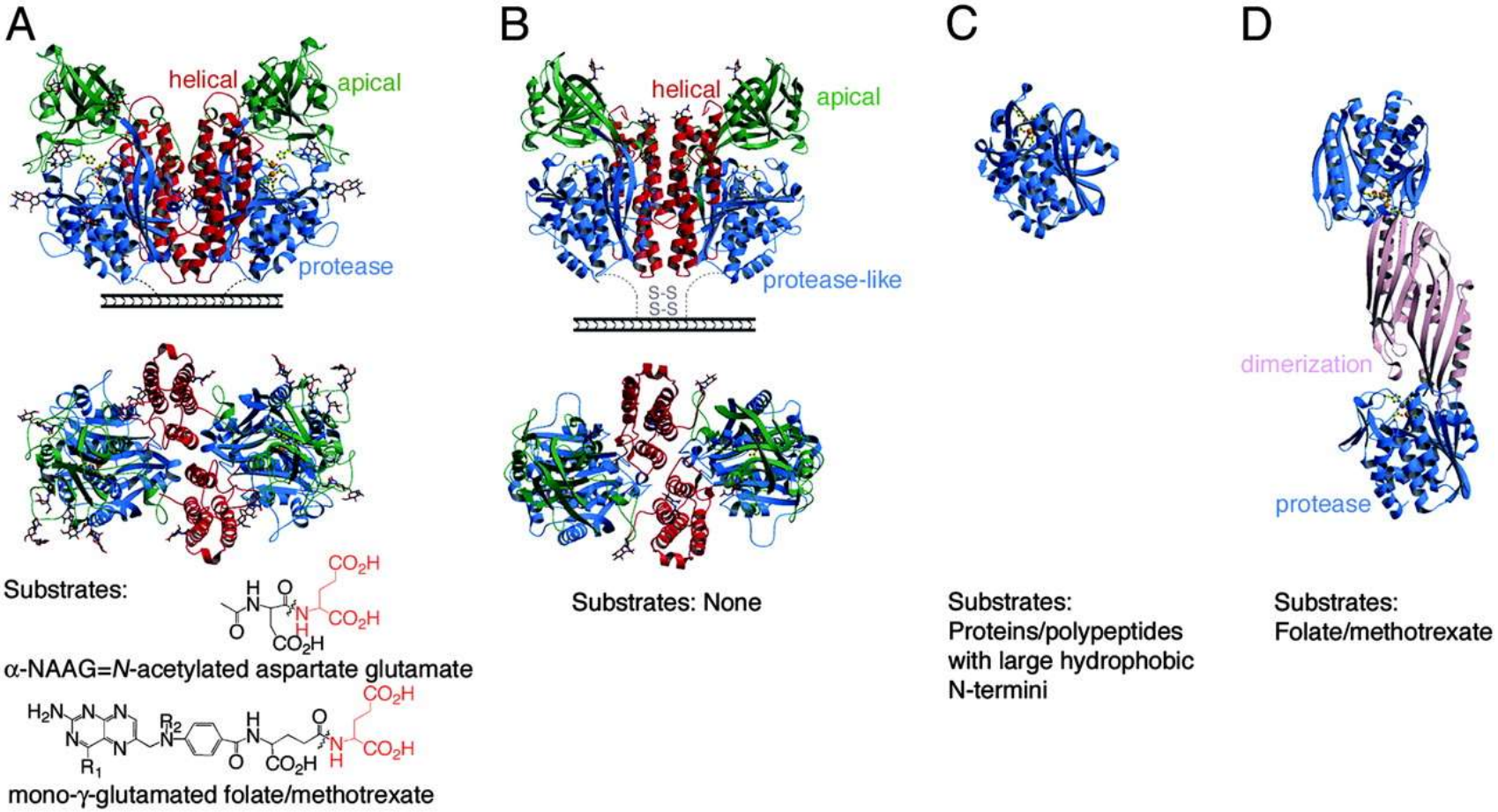
Theranostics in Development

- Prostate
- Breast
- Lung
- CNS
- Melanoma
- Colorectal
- GIST
- Apoptosis and Necrosis (Diagnostic)

Prostate Cancer Theranostics



Prostate-Specific Membrane Antigen (PSMA)



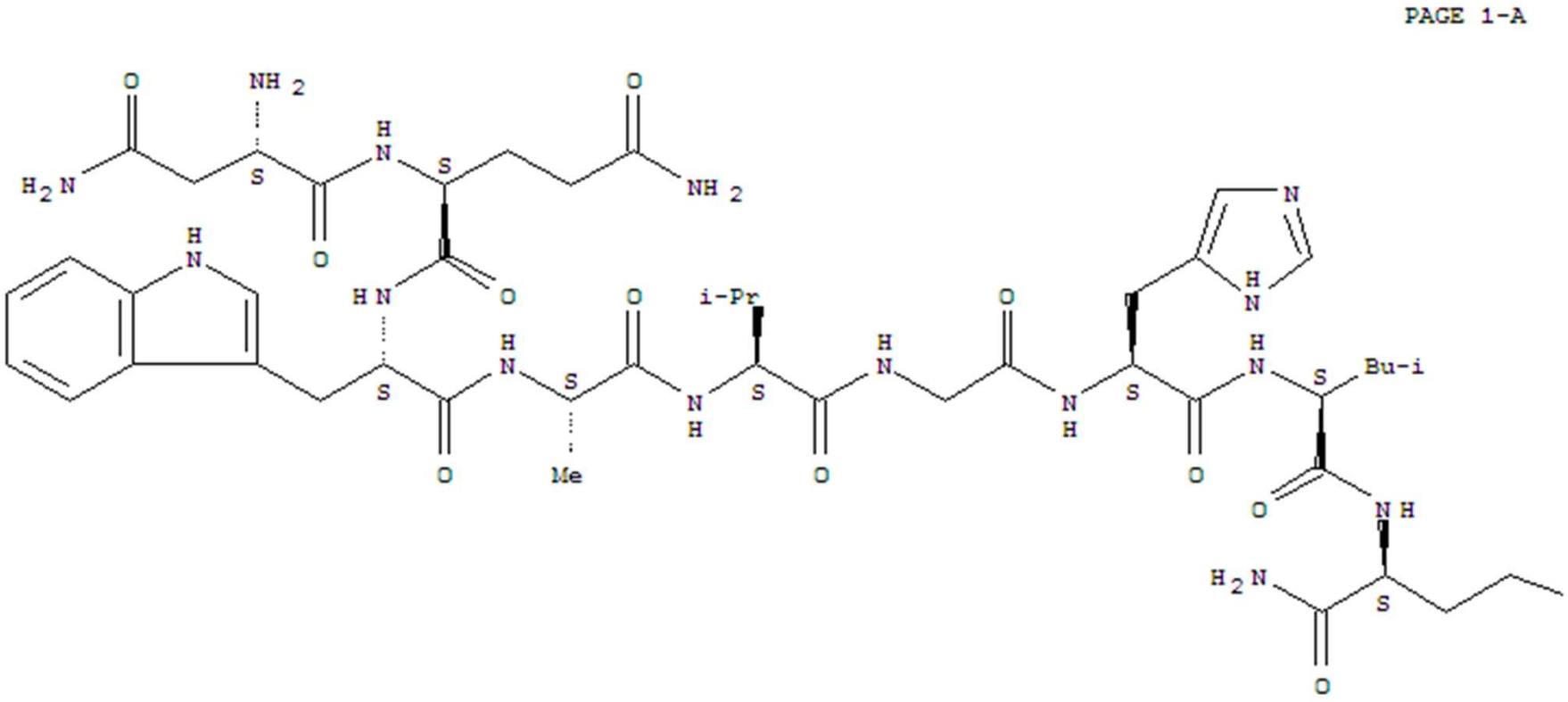
Difference in Ligands

Ligands are distinguished by

1. Target Affinity
2. Non-Target Affinity
3. Efficacy
4. Adverse Effects

European Fire-bellied Toad

Bombesin



Tumors with Bombesin Receptor Expression

- Head/Neck Squamous Cell 100%
- Small Cell Lung 85%-100%
- Prostate 62%-100%
- Non-small Cell Lung 74%-78%
- Breast 38%-72%

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Questions or Comments?