Antihydrogen's Notes on Sophiris Bio's Product Market

Last updated: 2017-06-13

Scientific Research

- Sponsored R&D papers
  - Pre-clinical development on BPH + PC (the original theory and animal tests) ([link])
  - BPH Phase 1 and 2 ([link])
  - BPH Phase 2b ([link])
  - Introduced the theory for PSA activated toxin because PC cells generate high levels of PSA ([link])
  - Update from pCa P2a from the 32nd Annual EAU Congress ([link])

- Publications related to the company's people
  - Emberton and Ahmed's co-authored publications ([link])
  - 2013 Focal therapy rationale and treatment opportunities ([link])
  - RW failed heart drug Rolofyline was repurposed to solve Alzheimer ([link])

- BPH development
  - IPSS questionnaire ([link])
  - 2008 CUA abstracts for BPH development ([link])
  - 2009 CUA abstracts for BPH development ([link])
  - 2011 BPH overview of existing treatment ([link])
  - 2011 Importance of prostate volume and urinary flow rate in prediction of bladder outlet obstruction in men with symptomatic benign prostatic hyperplasia ([link])
  - 2013 What's truly minimally invasive in benign prostatic hyperplasia surgery? ([link])
  - 2014 IPSS and QMax for dutasteride vs dutasteride and tamsulosin combination ([link])
  - 2016 Afluzosin vs tamsulosin vs silodosin ([link])
  - 2017 Overview of BPH treatments ([link])
  - 2017 Conflicting messages between Radiation Oncologists and Urologists After First-Line Surgical Treatment ([link])
  - 2017 Silodosin vs Tadalafil ([link])

- pCa development
  - 2006 TOOKAD uses laser activated soluable to cut off blood supply to tumors ([link])
  - 2009 Focal therapy will be a future treatment modality for early stage pCa ([link])
  - 2011 Management of low (favourable)-risk prostate cancer ([link])
  - 2015 Focal therapy for prostate cancer: The current status ([link])
  - 2016 Description of cryoablation, HIFU, focal brachytherapy, PDT/VPD, Nanoknife (electroporation) ([link])
  - 2017 ESRPC 15-Year Metatasis-Free Study ([link])
  - 2017 Summary update of latest technologies with non-radiation focal therapy considered experimental ([link])

Company Patents

<table>
<thead>
<tr>
<th>Expiry Year</th>
<th>US Patent</th>
<th>Title</th>
<th>Details</th>
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<tbody>
<tr>
<td>Year</td>
<td>Patent Number</td>
<td>Description</td>
<td>Field</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
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<tr>
<td>2025</td>
<td>8916161</td>
<td>Method of treating or preventing benign prostatic hyperplasia using modified pore-forming proteins</td>
<td>BPH</td>
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Comparative Treatment Pricing

As of 20170222

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Price</th>
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<tbody>
<tr>
<td>Prostate biopsy</td>
<td>$2,289</td>
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<tr>
<td>Prostate destruction with thermotherapy</td>
<td>$3,479</td>
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<tr>
<td>Prostate cryotherapy</td>
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<td>Prostate removal (endoscopic)</td>
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<tr>
<td>Prostate removal (surgical)</td>
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<td>Prostatectomy (outpatient)</td>
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<td>Laser surgery of prostate</td>
<td>$5,345</td>
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<tr>
<td>Castration (for cancer)</td>
<td>$8,690</td>
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20161004

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<th>Treatment</th>
<th>Price</th>
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<tbody>
<tr>
<td>HIFU</td>
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<td>[link]</td>
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<td>HIFU device</td>
<td>$500,000</td>
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20160620

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<tr>
<td>Robotic surgery</td>
<td>$14,000</td>
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</table>

Market Research

The BPH market

1. Harvard Medical School publication on when to consider changing BPH medication [link]
2. Harvard Medical School publication on erectile dysfunction and prostate disease [link]
3. 2003 BPH Fact Sheet from Medtronic [link]
4. 2011 BPH overview of existing treatment [link]
5. 2011 Decision Resources projects reduction from $4.8 billion to $4 billion by 2020 based on 2010 sales data [link]
6. 2011 Medtech Insight projects minimally invasive market reach $166 million by 2015 based on 2010 sales data [link]
7. 2011 On-going trial to determine if Finasteride (for BPH) causes or screens prostate cancer [link]
8. 2012 Tadalafil (Eli Lilly's Cialis) and Tamsulosin (Boehringer Ingelheim's Flomax) p-
The Prostate Cancer market

1. 2005 Topsalysin is a molecular scissor to cut prostate cancer (link)
2. 2009 Spending to survive: Cancer patients confronts holes in the health insurance system (link)
3. 2011 Economic burden of prostate cancer (link)
4. 2012 BCC Research: Global prostate cancer market prediction by 2017 is $50.3bln (link)
5. 2013 Finasteride may cause high grade cancer including a 2011 FDA warning (link)
6. 2015 Prices for pills and injections (link)
7. 2015 GBI Research: Prostate cancer market to 2021 is $13.6bln (link)
8. 2015 GlobalData: Prostate cancer market to 2023 is $8.3bln (link)
9. 2015 PC Gleason 6 looks like cancer (link)
10. 2015 Prices for pills and injections (link)
11. 2015 GBI Research: Prostate cancer market to 2021 is $13.6bln (link)
12. 2016 NX-1207 test procedure for P2 prostate cancer may be flawed (link)
13. 2016 PC patients looking for help (link)
14. 2016 BPH patients looking for help (link)
15. 2016 The Market Reports: Prostate cancer market to 2021 is $52.16 bln (link)
16. 2016 Stages of prostate cancer (link)
17. 2016 Long term oncological data for focal therapies are lacking (link)
18. 2016 Revisiting TOOKAD-soluble + VTP solution (photodynamic therapy) (link)
19. 2016 BCC Research: Global prostate cancer market prediction by 2021 is $65.1bln (link)
20. 2017 Issues with existing focal therapy solutions (link)
21. 2017 Multiparametric MRI may have visibility issues with cribriform patterned tumors (link)
22. 2017 Summary update of latest technologies with non-radiation focal therapy considered experimental (link)
23. 2017 Patients treated with focal therapy seems to be similar to full gland therapy (link)
24. 2017 Too early to tell if irreversible electroporation works (link)
25. 2017 Citing too early due to a lack of solid evidence for irreversible electroporation (link)
26. 2017 Grand View Research: Global prostate cancer market prediction by 2025 is $12bln (link)

pCa treatment options

1. 2014 Focal Laser Ablation for Localized Prostate Cancer: Principles, Clinical Trials, and Our Initial Experience (link)
2. 2014 Focal therapy: Magic bullet or unproven treatment (link)
3. 2015 MRI-guided focal laser ablation for prostate cancer (link)
4. 2015 Complications, Recovery, and Early Functional Outcomes and Oncologic Control Following In-bore Focal Laser Ablation of Prostate Cancer (link)
5. 2015 Ultrasound-MRI Fusion for Targeted Diagnosis of Prostate Cancer (link)
6. 2016 In Prostate Cancer, Xtandi Sparks More Fatigue and Pain Than Zytiga (link)
7. 2016 U.S. Hospital Adopts ‘Watchful Waiting’ as Standard for Low-Risk Prostate Cancers Due to MRI Advances (link)

pCa paid research material
pCa treatment side effect: Gynecomastia is a common side effect of androgen deprivation therapy (ADT) prostate cancer treatment

1. 2004 Surgery as a treatment option (link)
2. 2005 Seeking recognition, evaluation, and management (link)
3. 2012 Introduction post-ADT treatment problem (link)
4. 2012 RT preferred over TMX (link)
5. 2015 Xtandi AEs (link)

General

1. 2008 Translating Cancer Trial Endpoints Into Language of Managed Care (link)
2. 2016 NCCN handbook for Prostate Cancer patients (link)
3. 2013 Roche: Understanding Clinical Trials (link)
4. 2015 EvaluatePharma® World Preview 2015 (link)
5. 2016 EP Vantage 2016 Preview (link)
7. 2005 Crosstree Capital Partners (average M&A is 5 to 7 months) (link)
8. 2016 Factset M&A News and Trends (link)
9. 2015 SRR M&A Buy Side Process (average M&A is 6 to 8 months) (link)
10. 2014 Deloitte M&A Sell Side Process (average M&A is 5 to 7 months) (link)
11. 2015 The impact of financial advisor reputation on shareholder wealth paper (link)
12. 2007 Critical success factors in M&A projects (looks across 10 points, including time management and secrecy) (link)
13. 2001 One method to valuate biotech companies (link)
14. 2010 Hatch-Waxman Act results in generics gaming the system (link, link)
15. 2015 Development success rates 2006-2015 (link)
16. 2016 EFPIA Pharmaceutical Industry Figures (12 year development cost) (link)