Rose Bengal

Small Molecule Ablative Immunotherapy

A first-in-class halogenated xanthene

with unique therapeutic properties for fighting
cancer and inflammatory dermatoses
This presentation contains "forward-looking statements" as defined under U.S. federal securities laws. These statements reflect management’s current knowledge, assumptions, beliefs, estimates, and expectations and express management’s current views of future performance, results, and trends and may be identified by their use of terms such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "predict," "project," "will," and other similar words. Forward-looking statements are subject to a number of risks and uncertainties that could cause our actual results to materially differ from those described in the forward-looking statements. Readers should not place undue reliance on forward-looking statements. Such statements are made as of the date hereof, and we undertake no obligation to update such statements after this date. Risks and uncertainties that could cause our actual results to materially differ from those described in forward-looking statements include those discussed in our filings with the U.S. Securities and Exchange Commission (including those described in items 1A of our Annual Report on 10-K for the year ended December 31, 2015). Provectus Biopharmaceuticals, Inc. (“Provectus”) assumes no obligation to update any forward-looking statements or information that speaks as to their respective dates.

*No claims with respect to Provectus’ investigational drug PV-10 for solid tumor cancers and/or investigational drug PH-10 for inflammatory dermatoses are intended regarding safety or efficacy in the context of the forward-looking statements in this presentation.*

This investor presentation may be found at [www.provectusbio.com/news](http://www.provectusbio.com/news).
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Investigational Oncology Compound PV-10

• **PV-10**: A 10% solution of small molecule and halogenated xanthene Rose Bengal
  – Administered by direct injection into solid tumor cancers (e.g., melanoma, liver, breast)
  – Not designed to rely on a single pathway, receptor or antigen to work; no known resistance

• **First-in-class ablative immunotherapy**: Intended to kill only diseased cells upon injection into tumors; proper cell death would be the subsequent upstream trigger for a systemic anti-tumor response
  – Potentially **agnostic** to disease presentation and **orthogonal** to other cancer treatments

• **Rose Bengal**: A diagnostic agent for >100 years; a long, established history of use in humans
  – Original (first) medicinal use: an intravenous hepatic diagnostic (\(^{131}\text{I}-\)radiolabeled Rose Bengal/Robengatope\(^{®}\)) and a topical ophthalmic diagnostic (Rosettes\(^{®}\), Minims\(^{®}\))
  – Physical chemistry properties; not metabolized; a half-life of ~30 minutes in the blood stream

• **Therapeutic use**: Advanced by Provectus Biopharmaceuticals in both oncology and dermatology
  – Global intellectual property protection for the entire class of halogenated xanthenes
  – (i) Second medicinal use (as a therapeutic), (ii) Method of use, (iii) Formulation (including trade secrets), (iv) Synthesis (to ICH Guidelines specification), (v) Combination (with other cancer treatments)
An Opportunity for a Global Impact on Cancer

- Potentially viable for multiple cancer indications
- Potentially agnostic to disease presentation
- Intended to be synergistic in combination with other cancer treatments
- Intended to be orthogonal to other cancer treatments when combined
- Designed for ease of physician/provider use and/or re-use
- Designed to be supportive of patient compliance
- Designed for ease of shipment, storage and handling (all at room temperature)
- Globally affordable
• PV-10: Small molecule ablative immunotherapy
  – **Ablation**: the destruction of injected tumors
  – **Immunotherapy**: the subsequent, tumor-specific, immune response

• Rose Bengal weighs <1,000 g/mol
  – Not a macromolecule, polymer or biomolecule; best classified as a small molecule, albeit a very heavy one
  – Good, consistent pharmacokinetic properties
  – May occupy “natural-product-like” chemical space

• A potentially understood mechanism of action
  – Injection of Rose Bengal results in necrosis of tumor cells and the release of High Mobility Group Box 1 (HMGB1), with increased dendritic cell infiltration into draining lymph nodes and the activation of tumor-specific T cells¹

¹ Liu et al., Oncotarget 2016
**Local Effect:**
Tumor destruction (ablation)

- Intended for a patient’s tumor burden to be rapidly reduced after injection of PV-10 into his or her cancerous lesions/tumors
- Rose Bengal’s selective targeting of diseased cells is intended to minimize side effects
- PV-10 is not designed to rely on a single immunologic signaling pathway, cell receptor or tumor antigen to work
- Rose Bengal/PV-10 has no known resistance

**Systemic Effect:**
Tumor-specific immune response (immunotherapy)

- PV-10 intended to cause regression of untreated (i.e., non-injected) tumors
- Potentially prolongs progression-free survival (PFS)
- PV-10 is designed to be combined with different immunotherapies, targeted therapies, chemotherapy and radiotherapy for lesions/tumors not accessible to injection
- A recent study demonstrated PV-10 may have potential positive implications for overall survival (OS) and other clinical measures for the treatment of cutaneous melanoma metastases

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1 Read et al., Intrallesional PV-10 Chemoablation Therapy for the Treatment of Cutaneous Melanoma Metastases – Results of a Prospective, Non-Randomised, Single Centre Study. ANZ J Surg. 2016; 86 (S1).
Mechanism of Action

Intralossional Injection

Primary Lesion

Bystander Lesions

Primary Lesion Accumulation

Lysosomal Disruption

Tumor Ablation 1-2 hours

Autolytic Cell Death

Antigen Release

APC Uptake

Systemic, tumor-specific immune response 1-2 weeks

Bystander Tumor Destruction

T-cell Activation

APC, antigen presenting cell; DC, dendritic cell.
Some Clinical Trial Data: Melanoma, Cancers of the Liver

### Melanoma Clinical Development Program

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Treatment</th>
<th>Number of patients</th>
<th>Median patient age</th>
<th>Complete response</th>
<th>Overall response</th>
<th>Disease control</th>
<th>Predictors of response</th>
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</thead>
<tbody>
<tr>
<td>Thompson et al.</td>
<td>2008</td>
<td>Single agent PV-10</td>
<td>11</td>
<td>83</td>
<td>36%</td>
<td>48%</td>
<td>75%</td>
<td>Eschar doses &gt;0.2 mL</td>
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<tr>
<td>Thompson et al.</td>
<td>2010</td>
<td>Single agent PV-10</td>
<td>80</td>
<td>70</td>
<td>26%</td>
<td>51%</td>
<td>69%</td>
<td>Loco-regional blistering</td>
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<tr>
<td>Foote et al.</td>
<td>2014</td>
<td>PV-10 + radiotherapy</td>
<td>3</td>
<td>70</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Lippey et al.</td>
<td>2015</td>
<td>Single agent PV-10</td>
<td>19</td>
<td>80</td>
<td>26%</td>
<td>52%</td>
<td>68%</td>
<td>Young age; Small lesion size</td>
</tr>
<tr>
<td>Foote et al.</td>
<td>2015</td>
<td>PV-10 + radiotherapy</td>
<td>13</td>
<td>69</td>
<td>33%</td>
<td>87%</td>
<td>93%</td>
<td></td>
</tr>
<tr>
<td>Read et al.</td>
<td>2015</td>
<td>Single agent PV-10</td>
<td>19</td>
<td>76</td>
<td>31%</td>
<td>78%</td>
<td>88%</td>
<td></td>
</tr>
</tbody>
</table>

1 Phase 1 trial; response rate calculated per target lesion injected (26 in 11 patients); Mel Res 2008
2 Phase 2 trial; Ann Surg Oncol 2015
3 Case series; concurrent or prior radiotherapy given; Mel Res 2010
4 Single center expanded access (special access scheme in Australia) experience; J. Surg. Oncol 2016
5 Phase 2 study; radiation given after PV-10; mean patient age; overall response; ASCO/J Clin Oncol 2016
6 Single center expanded access experience (special access scheme in Australia); 2016 RACS Annual Scientific Congress
7 ESMO World GI 2015
8 ASCO/J Clin Oncol 2010

### Liver Cancer Clinical Development Program

- Goldfarb et al.; single agent PV-10, 13 Phase 1 trial patients; Median patient age 68 years
- Treated tumors: hepatocellular carcinoma (HCC), colorectal mets, non-small cell lung, melanoma, ovarian
- All injected tumors were stable in size at 28 days
- Of 4 tumors that had a long-term assessment, 2 had a partial response; 50% long-term tumor-specific objective response rate
- 10 of the first 13 patients were alive after up to 54 months
- No long-term adverse events

### Pharmacokinetics

- **Good, consistent pharmacokinetic (PK) properties**
- Melanoma, liver: PK samples collected over 28 days following the first injection; rapid clearance were consistent with the observed safety of PV-10; systemic uptake and clearance compared favorably with Robengatope® bolus ($C_{\text{initial}} \approx 20,000$ ng/mL and $k_E = 0.0039$ min$^{-1}$ or 0.234 hr$^{-1}$)
- Melanoma: Bi-exponential clearance (extravasate followed by tumor depot): $C_{\text{initial}} 2,400$ ng RB/mL, $k_A 0.0018$ min$^{-1}$, $k_E 0.00011$ min$^{-1}$, $t_{1/2,A} 6.3$ hours, $t_{1/2,E} 4.3$ days
- Liver: $C_{\text{initial}} 29,500$ ng RB/mL, $k_A 0.0026$ min$^{-1}$, $k_E 0.00012$ min$^{-1}$, $t_{1/2,A} 4.5$ hours, $t_{1/2,E} 4.2$ days
Metastatic Melanoma Phase 1 Trial Clinical Example

- Male, age 86, Stage IIIC, multiple subcutaneous metastases that recurred after surgery and radiotherapy
- Single treatment with 1.2 mL of PV-10 to 1 lesion
  - 3 untreated bystander lesions
- Complete remission at week 18
- No evidence of disease at 28 months
Hepatocellular Carcinoma Phase 1 Trial Clinical Example

- Female, age 71, 3.4 cm HCC lesion injected once with 5.1 mL PV-10
Implications of Emerging Immunology Data

- PV-10 has been implicated in each step of the Cancer Immunity Cycle\(^1\)\(^2\)
  - Release of cancer antigens–1; cancer antigen presentation–2; priming and activation–3; trafficking of T cells to tumors–4; infiltration of T cells into tumors–5; recognition of cancer cells by T cells–6; killing of cancer cells–7
  - PV-10 is as much about “starting the engine” and “stepping on the gas pedal” of the immune system as it is about “releasing the brakes”
  - **International, pivotal, monotherapy trial-in-progress: PV-10 vs. Chemotherapy or Oncolytic Viral Therapy**\(^3\)

- Potentially **agnostic** to disease presentation
  - e.g., melanoma, cancers of the liver, breast cancer, colon cancer, pancreatic cancer, etc.

- Potentially **orthogonal** to other cancer treatments when combined
  - Synergistic: “induce and boost” an immune response (PV-10 would induce the immune response, and the partner treatment would boost it); minimal risk of clinically relevant drug-drug interaction\(^4\)
  - **Combination therapy trials-in-progress: PV-10 + anti-PD-1 pembrolizumab**\(^5\); + radiotherapy\(^6\)
  - Completed pre-clinical work: PV-10 + chemotherapy\(^7\); + anti-CTLA4\(^8\)\(^9\); + anti-PD-1\(^9\)\(^10\); + anti-PD-L1\(^9\)\(^10\)

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\(^1\) Chen and Mellman, *Immunity* 2013. \(^2\) Liu et al., Oncotarget 2016. \(^3\) NCT02288897. \(^4\) Kazmi et al., In vitro inhibition of human liver cytochrome P450 (CYP) and UDP-glucuronosyltransferase (UGT) enzymes by rose bengal: system-dependent effects on inhibitory potential, *Xenobiotica*, 2014 Jul; 44(7):606-14. \(^5\) NCT02557321. \(^6\) Foote et al., A phase 2 study of intraläsional PV-10 followed by radiotherapy for localized in transit or recurrent metastatic melanoma, *J Clin Oncol* 34, 2016 (suppl; abstr e21072). \(^7\) Dees et al., SITC 2012. \(^8\) Wachter et al., AACR 2013. \(^9\) Liu et al., SITC 2014. \(^10\) Liu et al., AACR 2016.
PV-10: Oncology Meets Immunology

Priming and Activation
- Toomey et al., PLoS1 2013
- Liu et al., AACR 2014
- Sarnaik et al., ASCO 2014
- Pardiwala et al., SSO 2015
- Liu et al., Oncotarget 2016
  Melanoma (p, c)
  Colon cancer (p)

Cancer Antigen Presentation
- Liu et al., AACR 2014
- Liu et al., SITC 2015
- Liu et al., Oncotarget 2016
  Melanoma (p, c)
- Liu et al., AACR 2014
- Sarnaik et al., ASCO 2014
- Pardiwala et al., SSO 2015

Release of Cancer Cell Antigens
- Thompson et al., Mel Res 2008
- Agarwala et al., ASCO 2009
- Toomey et al., PLoS1 2013
- Liu et al., AACR 2014
- Sarnaik et al., ASCO 2014
- Pardiwala et al., SSO 2015
- Thompson et al., Ann Surg Oncol 2015
- Liu et al., SITC 2015
- Liu et al., Oncotarget 2016
  Melanoma (p, c)
  Breast cancer (p)
  Colon cancer (p)

Trafficking of T cells to Tumors
- Liu et al., AACR 2014
- Sarnaik et al., ASCO 2014
- Liu et al., Oncotarget 2016
  Melanoma (p, c)

Infiltration of T cells into Tumors
- Liu et al., Oncotarget 2016
  Melanoma (p, c)

Recognition of Cancer Cells by T Cells
- Liu et al., AACR 2014
- Sarnaik et al., ASCO 2014
- Liu et al., SITC 2015
- Liu et al., Oncotarget 2016
  Melanoma (p, c)

Killing of Cancer Cells
- Thompson et al., Mel Res 2008
- Agarwala et al., ASCO 2009
- Toomey et al., SITC 2012
- Dees et al., SITC 2012
- Wachter et al., AACR 2013
- Toomey et al., PLoS1 2013
- Liu et al., AACR 2014
- Sarnaik et al., ASCO 2014
- Goldfarb et al., ESMO World GI 2015
- Thompson et al., Ann Surg Oncol 2015
- Liu et al., Oncotarget 2016
  Melanoma (p, c)
  Breast cancer (p)
  Colon cancer (p)
  Hepatocellular carcinoma (p, c)
  Pancreatic cancer (p)

Combination Therapy: ‘Induce and Boost’ the Immune Response

- **PV-10**: Intended to kill only diseased cells upon injection into tumors; proper cell death would be the subsequent upstream trigger for a systemic anti-tumor response.

- **Immune activation after PV-10 injection**: Immunogenic cell death and signaling via release of HMGB1, dendritic cell recruitment and infiltration into draining lymph nodes, activation of tumor-specific T cells, and killing of non-injected tumors upon infiltration by these T cells.

- **In combination**: PV-10 is designed to provide the requisite pre-existing anti-tumor immunity for co-inhibitory blockade (i.e., checkpoint inhibitors) to potentially improve their clinical benefit.

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Liu et al., Oncotarget 2016
Reproducibility: The Hallmark of Western Science

- **Key collaborators:** H. Lee Moffitt Cancer Center and Research Institute (Moffitt), Maker Laboratory at the University of Illinois at Chicago (UIC)

- Moffitt and UIC reproduced and also expanded upon Provectus’ original work; did so independently of the company and each other\(^1,2,3\):
  - Tumor ablation, the local effect of destroying injected tumors
  - A tumor-specific immune response, the systemic effect of destroying untreated (non-injected or so-called “bystander”) tumors
  - Tumor-specific IFN-\(\gamma\) production
  - Multi-indication viability in solid tumor cancers (melanoma, breast cancer and colorectal cancer)

- **Mouse-to-man-to-mouse:** An exemplary demonstration of translational medicine\(^4,5\)
  - Moffitt identified important immunologic markers in model systems; verified key facets in humans
  - Similarly identified other markers in humans; substantiated those in mouse models

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\(^1\) Toomey et al., SSO 2012.  \(^2\) Toomey et al., PLoS1 2013.  \(^3\) Pardiwala et al., SSO 2015.  \(^4\) NCT01760499.  \(^5\) Liu et al., Intralesional rose bengal in melanoma elicits tumor immunity via activation of dendritic cells by the release of high mobility group box 1, *Oncotarget* (2016).
Valuation Drivers: Clinical Development Program

- **Melanoma:**
  - **Ongoing pivotal Phase 3:** PV-10 vs. Chemotherapy or Oncolytic Viral Therapy for Treatment of Locally Advanced Cutaneous Melanoma
  - **Ongoing Phase 1b:** PV-10 in Combination With Pembrolizumab for Treatment of Metastatic Melanoma

- **Cancers of the liver:**
  - **Ongoing Phase 1 (expanded):** PV-10 Chemoablation of Cancer of the Liver
  - **Ongoing Phase 1:** PV-10 Chemoablation of Neuroendocrine Tumors (NET) Metastatic to the Liver
  - **Planned:** A Phase 1b/2 study of PV-10 and standard of care(s) for Hepatocellular carcinoma (HCC) in Asia

- **Inflammatory dermatoses:**
  - **Ongoing Phase 2:** Cellular and Immunologic Changes in the Skin of Subjects Receiving PH-10
  - **Planned:** Potentially pivotal Phase 3 trials for atopic dermatitis and psoriasis
Intralesional (IL) Therapy: Increasing Awareness & Acceptance

• Until 2015, there was no history of clinical success and regulatory approval for nearly 40 years
  – Before Amgen's IL drug talimogene laherparepvec (Imlygic®) was approved in October 2015 for advanced melanoma, recent failure included Vical's velimogene aliplasmid (Allovectin-7®)
  – Before Allovectin-7®’s failure in 2013 (advanced melanoma), bacillus Calmette-Guérin (BCG) failed in 1978 (advanced melanoma)

• Today, as a result of Imlygic® and PV-10’s positive clinical data to date, there is more regulatory, medical and pharmaceutical community acceptance and awareness of the category of IL treatment (also known as intratumoral [IT] treatment)

• Monotherapy and combination therapy clinical studies and data of IL agents to date have demonstrated:
  – Notable and lengthy tumor destruction upon injection
  – Loco-regional and systemic immune responses
  – Minimal toxicity
  – Use in earlier disease settings of cancer
  – Priming of the immune system priming to allow other immunomodulatory drugs to boost and sustain its response
**PV-10: An NDA-stage, Wholly-owned, IL Cancer Asset**

<table>
<thead>
<tr>
<th>Intralesional agent</th>
<th>Proprietary name</th>
<th>Company</th>
<th>+ Medical device</th>
<th>As a monotherapy</th>
<th>In combination with</th>
<th>Note</th>
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<tr>
<td><em>bacillus</em> Calmette-Guerin (BCG)</td>
<td>n.a.</td>
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<tr>
<td>+ melanoma</td>
<td></td>
<td></td>
<td>1967-74</td>
<td>1974-1978</td>
<td>P1, 2013-</td>
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<tr>
<td><em>Velimogene aliplasmid</em></td>
<td>Allovectin-7</td>
<td>Yical</td>
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<td></td>
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<td></td>
<td></td>
<td>2002-11</td>
<td>2006-14</td>
<td></td>
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<td><em>talimogene laherparepvec (T-Vec)</em></td>
<td>Imlyric</td>
<td>Amgen (BioVex)</td>
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<td></td>
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<td>P1b/3, 2014-</td>
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<td></td>
<td>2006-16</td>
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<tr>
<td>+ HCC, liver mets</td>
<td></td>
<td></td>
<td>2015-</td>
<td></td>
<td></td>
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<tr>
<td>+ breast cancer</td>
<td></td>
<td></td>
<td>2016-</td>
<td></td>
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<tr>
<td>+ head &amp; neck cancer</td>
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<td></td>
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<td></td>
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<td>2014-16</td>
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<tr>
<td><em>Rose bengal</em></td>
<td>PV-10</td>
<td>Pro vectus Bio</td>
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<td>2005-7</td>
<td>2007-14</td>
<td>2015-</td>
<td>P1b/2, 2015-</td>
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<tr>
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<td>2009-</td>
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<tr>
<td>+ NET liver mets</td>
<td></td>
<td></td>
<td>2016-</td>
<td></td>
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<td>+ breast cancer</td>
<td></td>
<td></td>
<td>2009-8</td>
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<td>+ expanded access program</td>
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<td>2009-</td>
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<tr>
<td><em>Electroporation of plasmid interleukin-12</em></td>
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<td>OncoSec</td>
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<td>2011-</td>
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<td></td>
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<td>2012-2016</td>
<td></td>
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<tr>
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<td></td>
<td>2015-</td>
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<td></td>
<td>2015-</td>
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<td><em>coxackievirus A21</em></td>
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<td>2009-12</td>
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<td><em>Herpes simplex virus type 1</em></td>
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<td>2015-</td>
<td></td>
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<td>P2, 2014-</td>
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</tbody>
</table>

Updated Spring 2016. Dates (years) above from ClinicalTrials.gov: *First received-Last updated*, except for investigator-initiated (Australia) study of PV-10 + radiation. Not an exhaustive treatment of intralesional agents, oncolytic virus-based or otherwise.
Compassionate Use (Expanded Access) Program

• Began in Australia in 2009 (special access scheme); expanded to the U.S. in the same year
  – Was available for cancer indications that did not involve visceral organs, and to patients who were not subject to enrollment in clinical trials
  – **Eight sites:** St. Luke’s Hospital & Health Network (Bethlehem, PA), MD Anderson Cancer Center (Houston, TX), University of Louisville (Louisville, KY), Sharp Memorial Hospital (San Diego, CA), Melanoma Institute Australia (Sydney), Princess Alexandra Hospital (Brisbane, Australia), Royal Adelaide Hospital (Adelaide), Peter MacCallum Cancer Centre (Melbourne)

• Originally designed for 115 patients; an initial target was set for 25-30 patients
  – **Approximately 160 patients treated through 2015;** more treated in 2016

• The program is no longer available
  – **Rationale:** Two clinical trials\(^1,^2\) are underway (currently recruiting) for a substantial fraction of Stage III/IV melanoma patients; reached and exceeded the program’s accrual design and targets

\(^1\) NCT02288897. \(^2\) NCT02557321.
Clinical Data: Compassionate Use (Expanded Access) Program

- Data publications in 2016 for ~65 patients from the respective experiences of two Australian sites: Princess Alexandra Hospital (Brisbane)\(^1\) and Peter MacCallum Cancer Centre (Melbourne)\(^2\)

- Princess Alexandra: (reported; data submitted for publication) Read et al., Intralesional PV-10 Chemoablation Therapy for the Treatment of Cutaneous Melanoma Metastases - Results of a Prospective, Non-Randomised, Single Centre
  - 88% disease control (complete or partial response or disease stability); 31% complete response; N = 45
  - 25.5 months median overall survival; 6.1 months median complete response

  - 63% disease control (complete or partial response or disease stability); 26% complete response; N = 19

- **Patient population:** Unresectable local recurrence and in-transit metastasis of cutaneous melanoma, or American Joint Committee on Cancer (AJCC) Stage IIIB and IIIC — **Pivotal trial population:** Stage IIIB-IVM1a\(^3\)

- **Treatment with PV-10:** Most patients received only one course of treatment; a majority of patients did not have all of their lesions injected because of the number of lesions present — **Pivotal trial treatment:** Designed to treat all disease (i.e., all of a patient’s lesions)

- **Predictors of response:** Predictors of complete response were age and lesion size; the presence of ulceration, blistering, eschar, or pain following injection also was predictive of response; the number of injected lesions and time from primary diagnosis to treatment were not predictive — **Pivotal trial efficacy measures:** PFS (primary), complete response rate (CRR) (secondary), duration of complete response (secondary), OS (secondary)

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\(^1\) Read et al., Intralesional PV-10 Chemoablation Therapy for the Treatment of Cutaneous Melanoma Metastases - Results of a Prospective, Non-Randomised, Single Centre Study, *ANZ J Surg* 2016, 86 (S1). \(^2\) Lippey et al., Intralesional PV-10 for In-Transit Melanoma - A Single Centre Experience. *ANZ J Surg*. 2016, 86 (S1). \(^3\) NCT02288897.
Globally-Protected Intellectual Property

- **Protection through at least 2031:** (i) Second medicinal use, (ii) Method of use, (iii) Formulation, (iv) Synthesis and (v) Combination

- **Synthesis:** Process for the synthesis of 4,5,6,7-tetrachloro-3',6'-dihydroxy-2',4',5',7'-tetraiodo-3H-spiro[isobenzofuran-1,9'-xanthen]-3-one (rose bengal) and related xanthenes
  - The process by which pharmaceutical-grade Rose Bengal and related halogenated xanthenes are produced per International Conference on Harmonisation (ICH) guidelines
  - Also covers the use of alternative raw material when manufacturing Rose Bengal, and of certain xanthenes in pharmaceutical compositions and as medicaments as potential successor products
  - Approved in the US (#8,530,675; #9,273,022; #9,422,260); allowed in China; filed in multiple other global jurisdictions
  - Supported by Cambrex Corporation

- **Combination:** Combination of local and systemic immunomodulative therapies for enhanced treatment of cancer
  - The treatment combination (and combination regimen) of PV-10 and immunomodulatory therapeutic agents including anti-CTLA-4, PD-1 and PD-L1 compounds
  - Approved (#9,107,887) and applied for (nos. 14/748579, 14/748608 and 14/748634) in the US; filed in multiple other global jurisdictions
  - ‘Combination with systemic immunomodulatory agents’ jointly owned with Pfizer Inc.; ‘combination with systemic targeted agents’ solely owned
## PV-10: Oncology Meets Immunology – References

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