

BioBina LLC

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Treatment strategies for abdominal and thoracic cancers lack specificity

- Chemotherapy and external beam radiation therapy cannot be specifically targeted within the abdomen and pleural cavity, leading to:
 - Serious off-target effects, including damage to bone marrow, bowel, liver and lung
 - Decreased efficacy due to dosing limitations

Table 1. Acute complications of abdominopelvic radiotherapy after chemotherapy in 105 patients

	Number	Percent
Cramps or diarrhea	75/98	77
Nausea or vomiting	77/100	77
Cystitis	4/99	4
Myelosuppression		
WBC < $3.0 \times 10^9/l$	47/103	46
< $2.0 \times 10^9/l$	33/103	32
< $1.0 \times 10^9/l$	2/103	2
Plat < $150 \times 10^9/l$	31/103	30
< $100 \times 10^9/l$	43/103	42
< $50 \times 10^9/l$	16/103	16

Our solution: Liquid radiation therapy for abdominal and thoracic cancers

- Targeted delivery method will spare bone marrow to reduce off-target effects
- Lower toxicity will allow higher treatment doses, increasing efficacy
- Suited for all abdominal and thoracic indications: ovarian, bladder, gastric, peritoneal and appendiceal cancer, Stage I malignant pleural mesothelioma, among others.

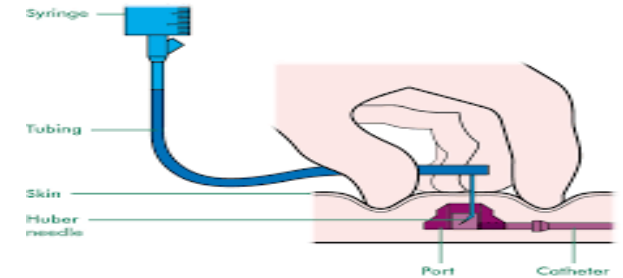
First indication: Ovarian Cancer

- 22,000 USA (77,000 worldwide) annual cases
 - 14,000 deaths annually
- **5 year overall survival rate of <35% for advanced ovarian cancer¹**
- Standard of care is systemic combination chemotherapy (paclitaxel and carboplatin), however:
 - Systemic chemotherapy delivers 40:1 ratio of the active ingredient of blood to tumor
 - Chemotherapy cannot penetrate deep into tissue to reach embedded tumors
- BioBina will provide a targeted alternative treatment strategy:
 - Confined to and concentrated in the tumor location to achieve superior clearance of cancer from the abdomen
 - Penetrates 7millimeters deep into tissue

Our Strategy: Targeted Delivery of AviRad-Y

- AviRad™, a novel soluble carrier for delivering short range Yttrium-90
- Sticks to and irradiates all inner surfaces and drifting intracavitary cancer cells
- Treats tissues to a depth of 5-7 millimeters
- Cannot be absorbed by capillaries, spares other organs

**Insertion of needle
into Mediport
for intraperitoneal
infusion**



**Construct remains in
peritoneal space**

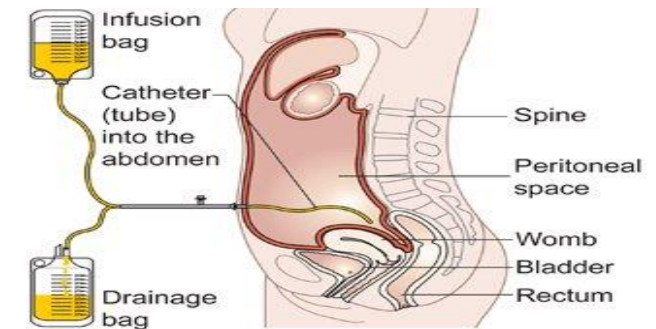
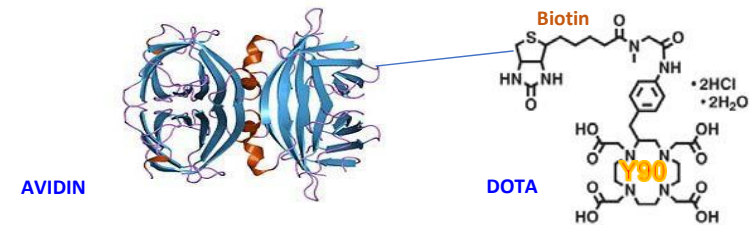


Diagram showing how you have chemotherapy into the abdomen
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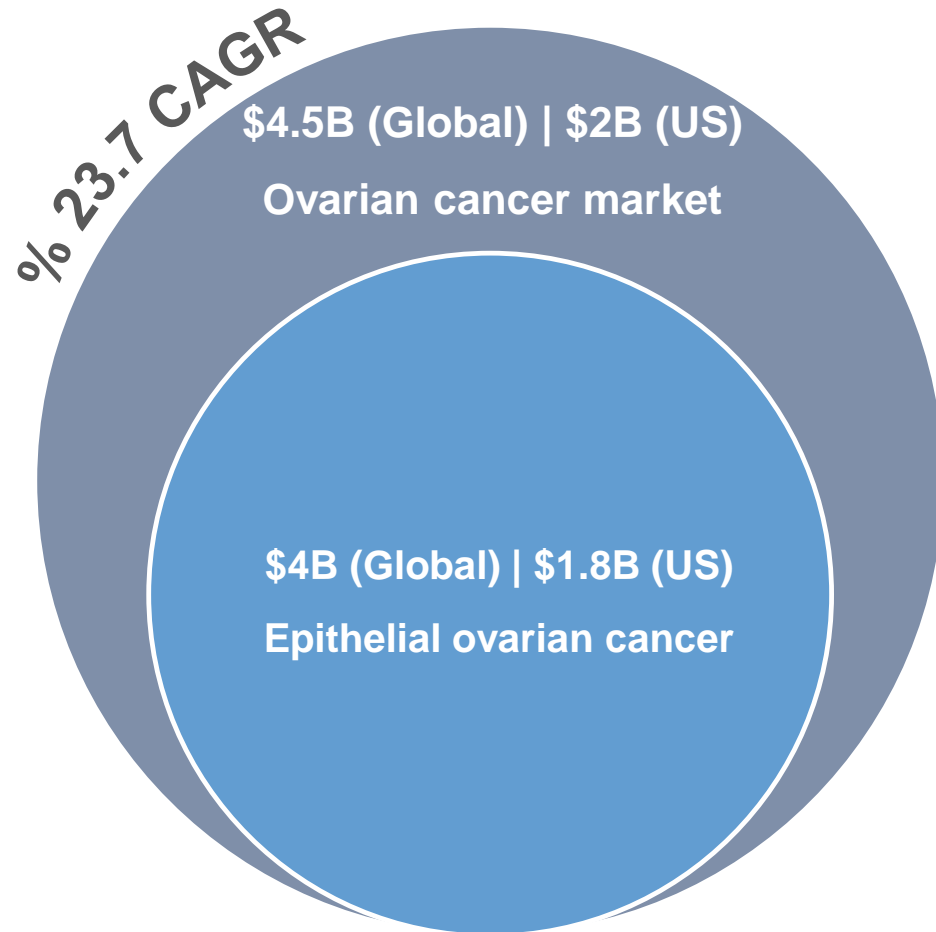
AviRad-Y Manufacturing and IP

- We have partnered with Eckert & Ziegler Radiopharma (EZR) to manufacture GMP AviRad-Y in kit form
- Will market to end-user radiotherapists and nuclear medicine physicians
- Pending PCT application will protect through 2034



Avidin-Biotin-DOTA-Y90 (AviRad-Y)

Market Analysis: Annual Revenue Projections for Ovarian Cancer



Comparables:

- Therasphere® - Injected Y90 radioactive glass microspheres
 - Approved (Humanitarian Device Exemption - Liver cancer) 1999
 - \$122M in revenue for 2017, 33% growth
- Zevalin® - Injected Y90 antibody
 - Approved 2002 (Leukemia)
 - \$43M in revenue for 2017
- Paclitaxel – Systemic chemotherapy (standard of care)
 - \$80M in revenue for 2017, 12.3% growth

Competitive Landscape

	Y-90-CC79 antibody (Univ. Alabama)	TheraSphere® (BTG)	Zevalin® (CASI)	BioBina
Targeted radiation	✓	✓	✓	✓
In development for ovarian cancer	✓	✗	✗	✓
Has shown clinical efficacy	✗	✓	✓	?
Stage	Phase III	Marketed (Liver Cancer)	Marketed (Leukemia)	Preclinical

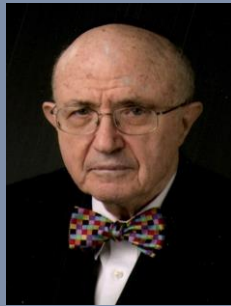
Second indication: Bladder Cancer

- 50,000 USA (200,000 worldwide) annual in-situ cases
 - 17,000 deaths annually
- Standard of care: bacillus Calmette-Guérin (BCG) treatment
- Overall survival rates are good, but for patients with carcinoma in-situ, **40–60% develop invasive disease within 5 years¹**
- Radical cystectomy (RC) is second-line treatment, no other efficacious second-line treatments
- BioBina will provide an alternative treatment strategy for recurring bladder cancer to **prevent resection**

Go-to-Market Strategy



Team



- **Robert N. Taub, MD/PhD, CSO**

- Former Professor of Medicine and Oncology, Columbia University
- Founder/Director of the Columbia Mesothelioma Center
- Expertise in intraperitoneal chemotherapy



- **Jonathan E. Taub, MA/MBA, COO**

- Longtime business administrator, operations and facilities manager
- Experience in the apparel industry, and non-profit care and education of individuals with disabilities