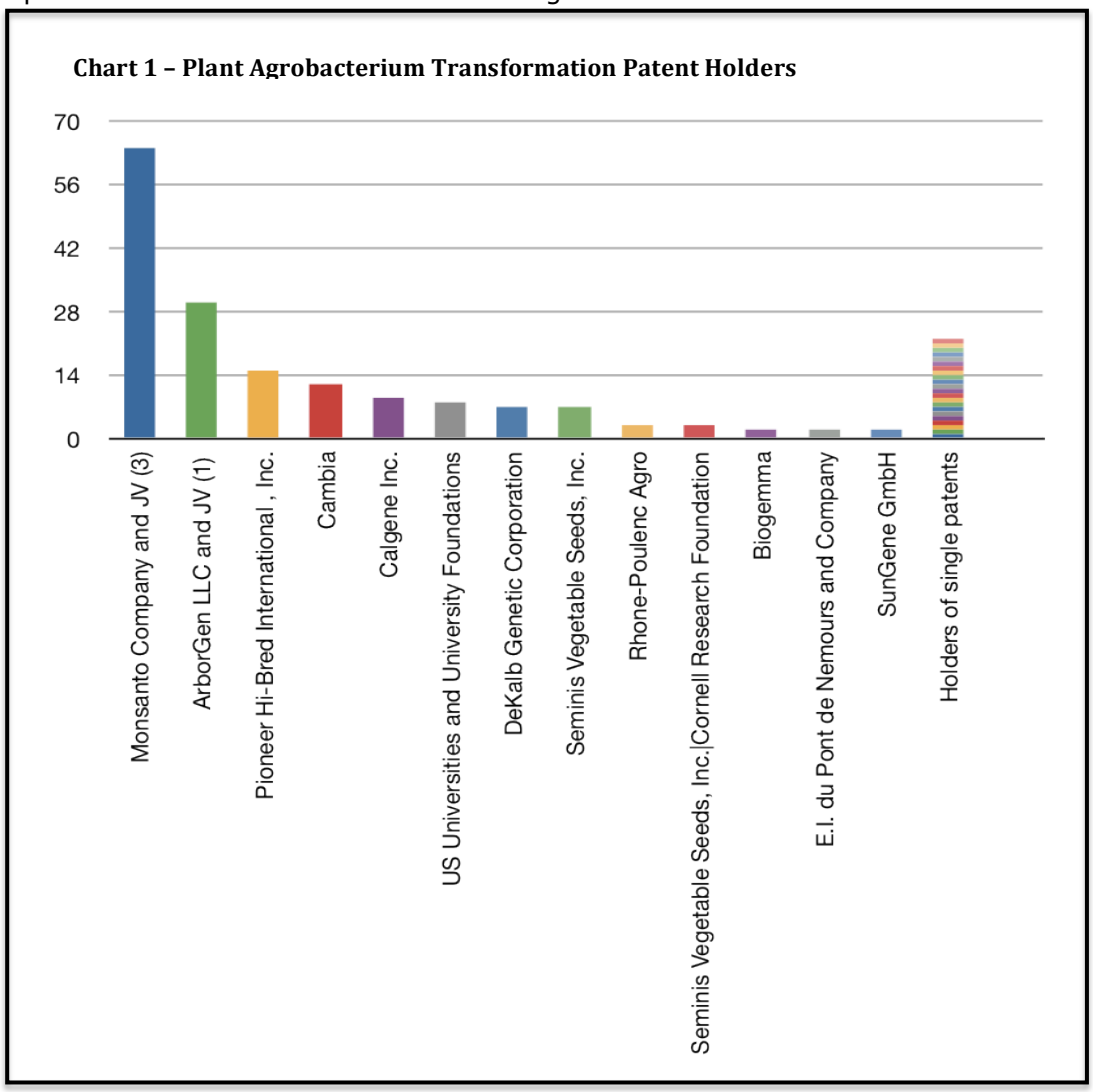
Intellectual Property Review

Ms. Lori Knowles of the Health Law Institute in Alberta, Canada was commissioned to perform an intellectual property review on the potential use of certain genetic constructs in the biotech American chestnut. The goal of this review is to allow the FHI science teams to gain a better understanding of the direction research in the field is moving, who is conducting that research and where that research is being conducted. In addition, the IP study will identify parties who hold relevant intellectual property and identify opportunities for the creation of strategic relationships or negotiations with patent holders.

In summary, the results of this review show that:

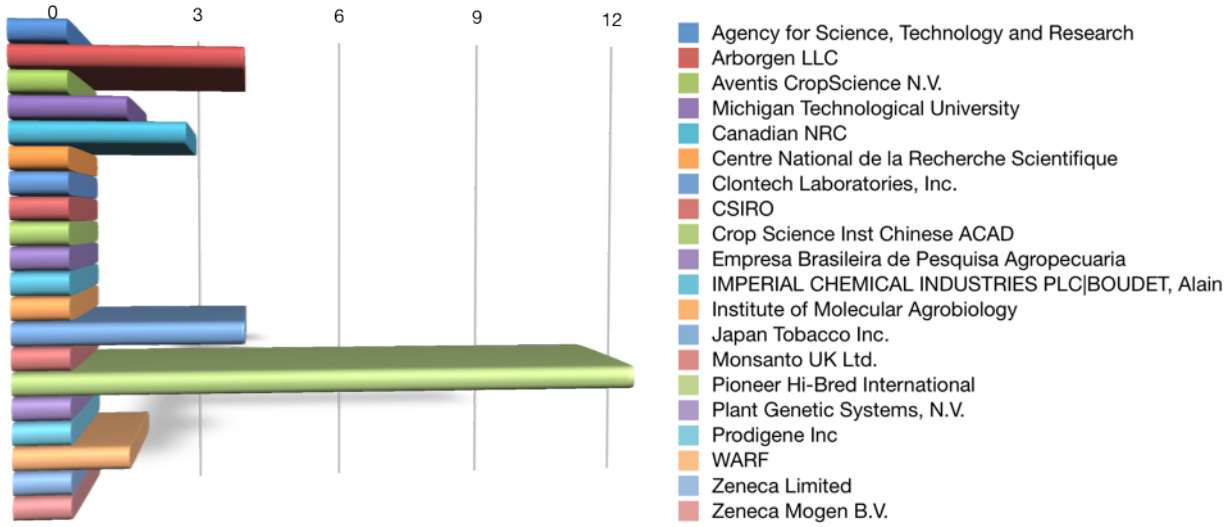
Based on keyword searching of patent databases in the broadly-defined field of agrobacterium-moderated transformation of plants the dominant holder of patents are Monsanto Technology Inc. and Arborgen LLC. There is evidence of a trend towards consolidation of related patents held by these two companies, especially as they emerge as the dominant players over the past half decade. (See Chart 1) The shift from a more numerous and international portfolio of patent holders ten to twenty years ago to a more consolidated field may be, in part, a function of the number of different species originally to subject transformation work for trait selection, and the development in the field of new methods of agrobacterium transformation.



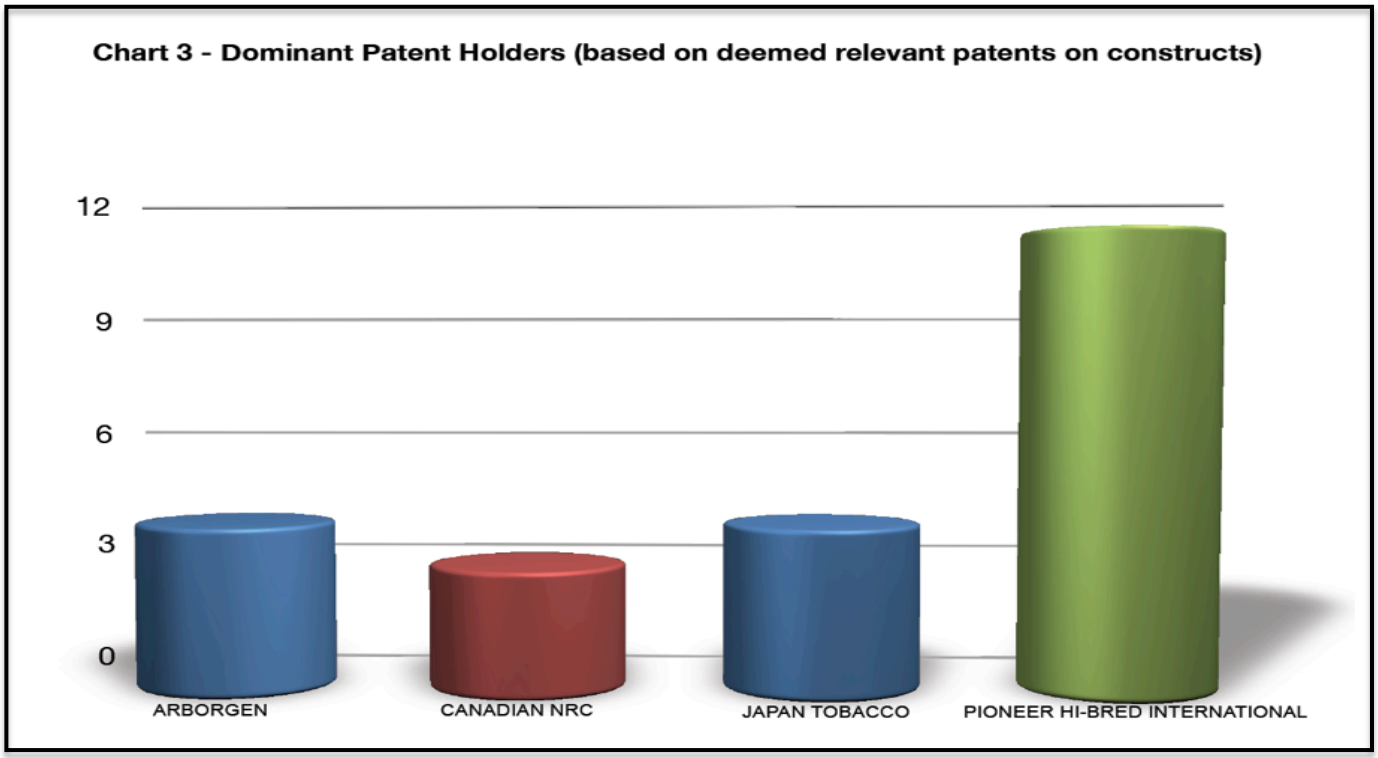
Over the last 5 years the number of patents that issue (or are published) has diminished. This may be evidence of a maturing field, and also the result of a shift from patents focused on specific species of plants as subjects of patents, to a narrower focus on innovations and improvements of those methods of transformation. In addition, concern about the commercial viability of genetically modified crops given political or popular reticence to adopt these products may have had a chilling effect on research, although this has not been empirically validated in this study.

In response to information from members of the science team (Powell Nairn laboratories), searches of patents held on particular constructs yielded narrower, more focused view of the patents deemed relevant to the FHI research. Analysis by title and abstract of the approximately 380 patents narrowed results to 41 potentially relevant patents. Applicants and assignees of these patents are based primarily in Europe, Japan, Canada, and the US. (See Chart 2) Despite the international spread of relevant scientific research there appears to be little evidence of multinational or multi-center patent filings between laboratories, as evidenced by the inventor names on the patents. With a few exceptions, it appears that isolated teams largely conduct research in this area. In addition the results of this study indicate that few patents are held outright by US public research institutions or universities.

Chart 2 - Relevant Patent Holders of Constructs



Of the 41 potentially relevant patents there emerge 4 dominant patent holders for construct-based searches; Pioneer Hi-Bred International Inc, Arborgen LLC, Japan Tobacco Inc, and the Canadian National Research Council (see Chart 3). Of these 4 patent holders, the patents held by the Canadian National Research Council and Japan Tobacco Inc., are close to expiration. To date 20 of the 41 patents identified have been tagged as clearly relevant, while the others are possibly relevant or may be relevant in the future. Additional patent claims analysis is suggested to definitively determine relevance, but this research will require an update and input from the FHI science team.



Next Steps: In the past month the FHI science team has created a list of 42 candidate genes that are either part of or soon to be part of FHI transformational research. Science team leaders anticipate that a similar list of constructs will be forthcoming before the end of the year. Additional intellectual property review of these constructs is deemed necessary to determine where potential lies for future obstacles that require either workarounds or licenses, and where future collaborations may lie.

These constructs should be cross-referenced with the work outlined above, and searched in the USPTO database. If potential applications or future research may impact the Canadian market a search of the Canadian Patent Office is indicated. Interviews with the science team will further clarify the potential relevance of any patents identified through research, with emphasis on identifying research that is not being conducted to help eliminate patents from the final results. Examination of applicants, assignees and inventors can help identify potential allies, partners and mentors and lay the groundwork for building constructive relationships to further the goals of the FHI.