IVa ISSUES RAISED AT THE TIME OF THE INITIAL ICI REVIEW

The initial review of the International Barcode of Life proposal took place in November 2008. In the following December, a list of follow-up actions was produced that contained 15 items requiring attention. In Table IVa-1 we list these requested actions, the progress that has been made on each, and the date on which that progress was made. There is a large body of supporting documentation that we have elected to move into appendices.

In addition to the list of action items, the reviewers' final report also highlighted additional issues that we feel are worth highlighting in the sections below.

UNDER-REPRESENTATION OF SOUTH-EAST ASIA AND WEST AFRICA

We are pleased to report that since the initial 2008 application, many new countries have become involved in the Project. Although most of the activity in these countries is at the level of the individual and cannot be given full "Node" status, it is heartening to see so many engaged countries. For example, since July 2009 more than 1,000barcodes have been produced from specimens arriving from West Africa[7], and more than 13,000 specimens from South-East Asia[8] were barcoded.

NUCLEAR MITOCHONDRIAL DNA

Nuclear pseudogenes of mitochondrial genomes ("Numts") are sometimes preferentially amplified over the true mitochondrial copy of the gene. Now that more than 1 million DNA barcodes have been produced, we can safely say from an empirical standpoint that Numts are not generally a problem for DNA barcoding. Nevertheless, they can be troublesome to work around in certain taxa and we have made great strides both in the detection of Numts and in the avoidance of amplifying them during DNA barcode analysis.

FINALIZATION OF COLLABORATIVE AGREEMENTS

The various MOUs and Letters of Intent that iBOL collaborators have signed with the Project's largest core facility, the Canadian Centre for DNA Barcoding, have been successful in ensuring the supply of specimens required to meet the Project's goals to date. Formal agreements will continue to be developed that specifically address the reciprocal expectations and commitments associated with iBOL Node status.

IBOL DATA RELEASE POLICY

The International Barcode of Life Project is the most aggressive releaser of taxonomic data on Earth. Our data release scheme (Appendix VI) has two phases: in the first phase, the DNA barcode sequence along with all specimen data except taxonomy below the Order level are released publicly soon after data generation. Phase II occurs when the remaining bit of data—the species name—is released, when the taxonomist is ready to do so (usually at the time of publication, but can occur at any time prior to that point). This policy approved by the iBOL Board of Directors and was implemented in June of 2009. However, at the Scientific Steering Committee (SSC) meeting held in September 2010 it was proposed that a "timer" be attached to the Phase II data release—likely in the range of one to two years.

SUBMISSION OF RECORDS TO GENBANK

In order to conform with INSDC standards and to ensure another level of data security, records generated by the iBOL Project are released on the Barcode of Life Data Systems (BOLD) website and are also submitted to GenBank. The latter process has been more difficult to implement than originally anticipated, but as of early 2011, data are being transmitted smoothly from BOLD to GenBank on a quarterly basis (soon to move to a monthly basis). For example, more than 40,000 records were transmitted to GenBank as part of the Q5 data release, and of those only 19 raised flags that required further processing.

[7] Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo
[8] Brunei, Burma, Cambodia, East Timor, Indonesia, Laos, Malaysia, Papua New Guinea, Philippines, Singapore, Thailand, and Vietnam

The next steps involve creating an "update channel" – a mechanism to synchronize updated information between BOLD and GenBank. For example, if a collaborator updates taxonomic information on BOLD, this change should be reflected on GenBank in a timely fashion. Once this update mechanism is in place, the Phase II data release can also be implemented, which is itself essentially an update to existing GenBank records, to provide more detailed taxonomic information.

INTELLECTUAL PROPERTY

As noted by the initial reviewers of this Project, iBOL has been proceeding with a "no IP" model to ensure that no barriers exist to the dissemination and use of the data produced. However, this is not a clear open-and-shut case which is why our GE^{3}LS team has dedicated one of its six projects to the study of IP and to provide advice for the best model for iBOL to follow moving forward.

DIGITAL IDENTIFICATION OF NEW SPECIES

Great progress has been made in the development of a "Barcode Index Number" (BIN) that groups DNA barcodes into clusters that empirically closely match known species groupings. This tool is not only useful for assigning taxonomic names to unknown specimens, but can alsobe used to create new species hypotheses that can be the focus of further study by taxonomists. The BIN is automatically attached to all records transmitted to GenBank.

Table IVa-1: Issues in the December 3rd, 2008 review report

Item #	*Requested action*	*Progress*	*Date*
1	Clarification of roles	Revised descriptions were accepted by the BOD: Financial Director and Project Manager (Appendix III)	7-Apr-09
2	Recruitment of an Executive Director	Advertisement posted in the Globe & Mail and on NatureJobs.com	9-Oct-09
		Results of initial reviews of CVs and interviews presented to BOD	26-Feb-10
		Peter Freeman joins iBOL	1-Jul-10
		BOD approves appointment of Peter Freeman as Executive Director of iBOL	13-Jul-10
3	Establishment of an SAB	Terms of reference adopted by the BOD	7-Apr-09
		Updated TORs adopted by the BOD, including initial membership details (Appendix VII)	28-Sep-09
		Membership of SAB finalized, adopted by the BOD (Appendix III)	12-Nov-09
		• First meeting of the iBOL SAB, oral report presented to BOD	26-Sep-10
4	Plan for sample sourcing	Sample supply letters obtained from collaborators for ~100K specimens, submitted to Genome Canada	1-Jun-09
		Original plan submitted to BOD	28-Sep-09
		Revised sample sourcing plan presented to the BOD (Appendix III)	12-Nov-09
5	QA/QC plan and SOPs	External review performed by Richard Wintle, Assistant Director at the Centre for Applied Genomics at The Hospital for Sick Children, Toronto. Very positive report submitted to Genome Canada.	18-Jun-09
		Technology Development Advisory Group site visit, followed by positive report(Appendix III)	15-Dec-09
		Updated SOPs sent to Genome Canada	20-Oct-10
6	Development of a revised budget	Revised budget presented to BOD	7-Apr-09
		Draft 2010-2011 budget presented to BOD	13-Jul-10
		Final 2010-2011 budget submitted to OGI/Genome Canada (reported against in Appendix I)	12-Oct-10
7	Further justification for costs associated with:		
	• IT infrastructure	Plan submitted to BOD (Appendix III)	7-Apr-09

	• Sample processing	Empirical data from the Canadian Centre for DNA Barcoding is presented to board demonstrating the average cost of barcoding a single specimen is $21 (including failures and labour)	26-Apr-10
	• Project management	See "Clarification of Roles", above	
8	Development of a plan to secure and monitor co-funding	Initial secured co-funding and plans for future co-funding submitted to BOD (Appendix III)	7-Apr-09
		Quarterly updates on international funding have been presented to BOD	
9	Establishment of a TDAG	Initial proposed members and TORs presented to BOD	7-Apr-09
		Updated members and TORs for the TDAG adopted by the BOD (Appendix III)	28-Sep-09
		First meeting of the TDAG (report in Appendix III)	15-Dec-09
		Second meeting of the TDAG, oral report to BOD	26-Sep-10
10	Submission of detailed plan for IT infrastructure	Plan submitted to BOD (Appendix III)	7-Apr-09
11	Submission of a revised Gantt chart	Revised chart submitted to BOD (see the latest chart in Appendix IX)	7-Apr-09
12	Submission of a revised GE3LS plan	Revised plan submitted to Genome Canada	30-Apr-10
		Following positive external reviews, plan approved by Genome Canada	5-Jul-10
		Final plan presented to and approved by BOD	13-Jul-10
13	Revised data release policy	Revised policy developed and submitted to Genome Canada (Appendix VI)	12-Jun-10
		Policy adopted by the BOD	28-Sep-09
14	Development of an IP policy	The development of a robust IP policy will be undertaken by the GE3LS team, under Activity 3	TBD
15	Development of an open access publication policy	Open-access publication policy submitted to and accepted by Genome Canada (Appendix VII)	29-Apr-09