THERAPEUTIC GOODS ADMINISTRATION

CONSULTATION SUBMISSION

Regulation of software, including Software as a Medical Device (SaMD)

Frontier Genomics Pty Ltd

March 2019

Company Overview

Frontier Genomics Pty Ltd, is a private company established in February 20018, based in New South Wales. In conjunction with the University of Sydney, Frontier Genomics is actively developing a series of Clinical Decision Support information systems that we intend for use in the analysis of data gathered by genetic tests.

These Clinical Decision Support information systems are predictive analytical software programs that utilise algorithms incorporating Machine Learning software to perform meta-analyses of clinical datasets. These programmes will produce statistical inferences regarding the potential influence genetic splicing variants may have on protein synthesis.

These Clinical Decision Support information systems are intended to support the research and analysis of genetic variants performed by trained scientists and clinicians within a pathology laboratory environment. Intended use of these software programmes will form part of a much larger course of research required for classification of genetic variants that may cause disease.

In light of the proposed changes to the Regulation of software, including Software as a Medical Device (SaMD), these Clinical Decision Support tools may meet the definition of a medical device in section 41BD of the Therapeutic Goods Act.

Comments on the Proposal

We welcome the opportunity to contribute feedback on how software, including Software as a Medical Device, is regulated in Australia.

As a prospective manufacturer of Software as a Medical Device, we firmly believe in the value of a legislated regulatory framework that promotes product safety, quality and efficacy. Furthermore, we believe accreditation, within an internationally harmonised Australian regulatory framework, provides market participants with validation, competitive advantage and may reduce currently existing barriers to international market development.

Our Response

As an early- stage organisation, we believe we are most likely to be affected by Proposed Change 1 - Changes to the classification rules. Accordingly, our responses are only directed to this matter.

Proposed Change 1 - Changes to the classification rules

Do you support the proposal to change the way medical device software is regulated?	We support the proposal to change the way medical device software is regulated, however do not support some of the proposed changes to the classification rules, particularly as applied to Clinical Decision Support information systems.
Why or why not?	We believe patients, users and manufacturers of medical device software have been poorly served by existing classification rules. Existing classification rules, developed prior to development of current technologies, have no substantive regard to how practical application of medical software technologies differs from that of traditional medical devices. In this light, we believe the proposed changes to the classification rules do not sufficiently account for the diversity and application of Clinical Decision Support information systems used to inform or aid clinicians in making a diagnosis. For example; genetic testing does not provide a disease diagnosis. Diagnosis of genetic conditions is directed by interpretation of clinical phenotyping and achieved by research-based accumulation of supportive clinical, genomic, biochemical and functional evidence. Clinical interpretation of genomic sequencing information, generated on an increasingly massive scale, is considered impossible without the use of Clinical Decision Support information systems.
If you do not support the proposal, do you have any suggestions for an alternative that would be acceptable to you?	Currently, we are concerned with the following wording in the proposed changes to classification: *Aid a clinician in making a diagnosis. The device is Class IIa.* We suggest the following definition as an acceptable alternative: *Clinical Decision Support information systems which provide information used by clinicians to direct additional research or laboratory functional analysis to confirm a diagnosis. The device is Class I.*

What do you consider to be benefits and disadvantages of the particular proposals for change?	Clinical Decision Support information systems are in widespread use currently in Australian Pathology laboratories. Many are developed within Pathology laboratories and shared amongst peers as part of research-directed efforts to deliver clinical best-practice. The data produced by these Clinical Decision Support information systems often do not provide nor confirm diagnosis. These data typically make a small, specific, yet vital contribution to a significantly larger pool of evidence, collated by clinical decision makers interpreting genetic variant data, according to best practise guidelines established by the ACMG-AMP. We believe a *major disadvantage* of these proposed changes is that many Clinical Decision Support information systems currently in use by genetic Pathology laboratories may be classified as Class II. We consider the financial and operational burden of regulatory compliance to Class II classification standards, required by many Clinical Decision Support information systems under the current proposals, may be beyond the financial and operational scope of many software developers. Subsequently, *many such Clinical Decision Support information systems may be unable to remain in market*, depriving genetic Pathology laboratories of critical infrastructure.
Do you believe there will be any unintended consequences arising from the proposed changes?	We believe an unintended consequence created by these proposed changes would be that many commonly used Clinical Decision Support information systems, currently used by genetic Pathology laboratories, would be unable to remain in market. Removing Clinical Decision Support information systems from market would deprive genetic Pathology laboratories access to existing critical infrastructure. Such action may; • Decrease the diagnostic yield of genetic Pathology laboratories, and • Reduce Pathology laboratory efficiency, and • Restrict access to laboratory functional analysis that confirms diagnosis, and • Reduce the Return on Health Services Investment in genomic testing, and

	• Prevent Australian Health Services from keeping pace with accelerating clinical demand for genomic testing A reduced diagnostic yield may: • Reduce early intervention, prenatal counselling and pre-implantation genetic diagnoses, and • Increase the significant emotional cost to parents of children carrying chronic genetic disorders, and • Increase the enormous, lifetime financial cost of acute care for patients with genetic disorders, funded by Australian Health Services.
What financial impact (both costs and savings) would implementing the proposed amendments have for you?	We do not believe there would be any financial savings arising from these proposed amendments. We believe the regulatory approval process required by these proposed amendments will impose a substantial cost on our start-up business. It is likely that regulatory approval will delay market entry. Such delay will shorten our competitive advantage and negatively impact cashflow.
What period would be needed for your organisation to implement the proposed changes?	A regulatory approval process for medical devices can be easily measured in years to complete. We believe our organisation would likely require 12-18 months to implement proposed changes and complete a regulatory submission process.