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Quantum Genomics

Quantum signe deux nouveaux partenariats

Quantum Genomics a donc annoncé la signature de deux nouveaux partenariats : avec TEVA pour Israël et avec JULPHAR pour le « MENA ». Par ailleurs, la société renforce sa trésorerie. Achat Fort avec un objectif de cours largement revu à la hausse, à 15,20 €.

Quantum signs two new partnerships

Quantum Genomics has therefore announced the signing of two new partnerships: with TEVA for Israel and with JULPHAR for "MENA". The company is also strengthening its cash flow. Strong purchase with a price target largely revised upwards, to € 15.20.

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Recommendation	**1. Strong Buy**
Closing Price on 10 Dec. 2021	**4,28 €**
Target Price	**15,20 € (+255,5 %)**

L'exercice 2021 se termine très bien pour Quantum Genomics, puisque la société vient de signer deux accords de licence exclusifs pour deux zones géographiques. Ainsi, Quantum met-elle en place sa stratégie « d'accords locaux » pour l'hypertension.

Les premiers résultats de l'essai QUORUM dans l'insuffisance cardiaque (HF) confirment l'intérêt du firibastat dans cette indication. De plus, les deux études pivots FRESH et REFRESH, devraient conduire à un enregistrement du firibastat dans l'hypertension Difficile-à-traiter/Résistante. D'ailleurs, plusieurs partenaires convaincus par la molécule ont décidé de signer des accords de licence exclusive.

Nous maintenons notre opinion Achat Fort sur la valeur et relevons notre TP à 15,20 € afin de prendre en compte les derniers évènements relatifs à la valeur.

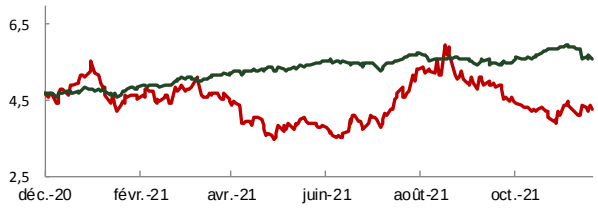
Fiscal year 2021 is ending very well for Quantum Genomics, as the company has just signed two exclusive license agreements for two geographic areas. Quantum is thus implementing its "local agreements" strategy for hypertension.

Initial results from the QUORUM trial in heart failure (HF) confirm the value of firibastat in this indication. In addition, the two pivotal studies FRESH and REFRESH should lead to the registration of firibastat in Difficult-to-Treat/Resistant hypertension. Moreover, several partners convinced by the compound have decided to sign exclusive licensing agreements.

We maintain our Strong Buy rating on the stock and raise our TP to € 15.20 to consider the latest events on the stock.

Performances

Absolute perf.	1 month	6 months	12 months
	+9,6 %	+12,5 %	-8,4 %



Market data

Reuters / Bloomberg ticker	ALQGC.PA / ALQGC.FP
Market capitalisation (€m)	116,9 M€
Enterprise value (€m)	89,8 M€
Free Float	78,5 M€ (67,1 %)
Number of shares	27 348 288
Daily volume	232 545 €
Capital turnover rate (1 year)	51,7%
High (52 weeks)	5,94 €
Low (52 weeks)	3,47 €

Current shareholding structure

Free float : 67.1 % ; Institutional investors 20.9 % ; Management : 5.0 % ; Tethys: 3.7% ; Otium Capital: 3.3%.

Agenda

Q2 2022: 1st FRESH study results

Key figures

	2019	2020	2021E	2022E	2023E
Revenues (M€)	0,4	2,3	5,3	7,7	38,5
Change (%)	-	-	*135,3%*	*45,4%*	*397,5%*
EBITDA (M€)	-10,5	-13,5	-5,7	-12,5	27,3
EBIT (M€)	-10,8	-13,9	-5,8	-13,6	25,3
EBIT Margin (%)	*NS*	*NS*	*NS*	*-176,1%*	*65,6%*
Net profit gp sh.(%)	-9,1	-11,5	-5,0	-11,7	21,2
Net margin (%)	*NS*	*NS*	*NS*	*-151,0%*	*55,1%*
EPS	-0,50	-0,43	-0,19	-0,44	0,79

Ratios

	2019	2020	2021E	2022E	2023E
Ev / Revenues	NS	NS	16,9	11,6	2,3
EV / EBITDA	NS	NS	NS	NS	NS
EV / EBIT	NS	NS	NS	NS	NS
P / E	NS	NS	NS	NS	NS
Gearing (%)	NS	NS	NS	NS	NS
Net debt / EBITDA	NS	NS	NS	NS	NS
RCE (%)	NS	NS	NS	NS	NS

Quantum est rejoint par JULPHAR

Quantum a annoncé avoir conclu et signé un accord de licence et de production exclusif de portée internationale. En effet, en signant avec le laboratoire pharmaceutique JULPHAR pour la production et la commercialisation de sa molécule leader, le firibastat dans l'hypertension, Quantum Genomics devrait avoir accès à plusieurs régions du monde. Gulf Pharmaceutical Industries PSC ou JULPHAR est une société publique basée aux Émirats Arabes Unis qui fabrique et vend des médicaments et d'autres types de composés pharmaceutiques et médicaux, en plus des composés cosmétiques. JULPHAR est leader sur la région « MENA » (Middle East North Africa). JULPLHAR est donc présent aux Emirats Arabes Unis (Bahreïn, EAU, Oman, Qatar), au Moyen Orient (Arabie Saoudite, Irak, Jordanie, Koweït, Syrie, Yémen,) et en Afrique du Nord (Algérie, Egypte, Maroc, Libye, Tunisie) ainsi qu'en Afrique (Mauritanie). Par ailleurs, l'accord avec JULPHAR ouvre à la molécule de Quantum les pays de la communauté des Etats Indépendants (Arménie, Azerbaïdjan, Biélorussie, Géorgie, Kazakhstan, Kirghizstan, Moldavie, Turkménistan, Tadjikistan, Ukraine) ainsi que la Turquie. En outre, JULPHAR recevra les droits de fabrication du firibastat pour ses différents marchés. En contrepartie, Quantum recevra des paiements initiaux et d'étapes de 17,73 M€ ($ 20 millions) ainsi que des royalties sur les ventes futures. Etant donné le stade d'avancement du développement du firibastat, nous pensons que le taux de redevance que Quantum devrait recevoir se situerait autour d'une dizaine de pour cent, un peu comme cela avait été négocié dans l'accord Biolab Sanus.

JULPHAR maintient un portefeuille de produits qui cible les principaux segments thérapeutiques, notamment l'endocrinologie, les anti-infectieux, la cardiologie et la gastro-entérologie, les produits en vente libre, la néphrologie, la dermatologie, les produits respiratoires, métaboliques et le traitement des brûlures et blessures. En plus, la société possède un réseau de plus de 10 usines de fabrication ainsi qu'un réseau logistique. La Société compte environ 800 produits sous diverses formes posologiques et d'autres sont en voie de développement. Les filiales de la Société comprennent Mena Cool FZE, qui s'occupe du transport, et JULPHAR Pharmaceuticals PLC, qui s'occupe de la fabrication de médicaments, de matériaux d'emballage et de conditionnement. Le groupe a généré en 2020, 140 M€ en très nette progression par rapport à 2019 (72,8 M€).

Teva, l'autre partenaire pour le Moyen Orient

En novembre, Quantum Genomics s'est rapproché de Teva Israël, une filiale du groupe Teva Pharmaceuticals Industries Ltd., afin d'établir un accord de licence exclusif couvrant essentiellement le marché israélien. Selon cet accord, Quantum est en droit de recevoir 9,74 M€ ($ 11 millions) de paiements (initiaux et d'étapes) ainsi que des royalties comprises entre 25 et 30% des ventes futures. Avec cet accord, Quantum se rapproche d'un acteur qui est aujourd'hui à la 14ème place de la pharmacie mondiale et qui a généré, en 2020, $ 16.7 milliards (14,78 Md€) de chiffre d'affaires avec un EBITDA de $ 4.6 milliards (4,07 Md€).

Si le Copaxone™ avec $ 1,33 milliards de revenus (1,17 Md€) demeure le fer de lance du pipeline de Teva, le groupe est à la recherche de nouveaux relais de croissance, car les guidances pour 2021 montrent une très faible évolution du CA à $ 16,4-16,8 milliards (14,51-14,87 Md€).

L'accord avec Teva pour son marché historique, Israël, peut représenter un relais croissance aussi bien pour Quantum Genomics qui aurait ainsi accès à la puissance commerciale globale de Teva Pharmaceuticals. Mais, il s'agit aussi d'une réelle opportunité pour Teva Pharmaceuticals, qui a ainsi accès à une molécule innovante, « first-in-class », dans une indication où l'innovation est rare et avec une stratégie de transformation en profondeur de l'indication.

Quantum is joined by JULPHAR

Quantum announced that it has entered into an exclusive international licensing and manufacturing agreement. Indeed, by signing with the pharmaceutical company JULPHAR for the production and commercialization of its leading molecule, firibastat in hypertension, Quantum Genomics should have access to several regions of the world. Gulf Pharmaceutical Industries PSC or JULPHAR is a public company based in the United Arab Emirates that manufactures and sells drugs, medicines and other types of pharmaceutical and medical compounds, in addition to cosmetic compounds. JULPHAR is a leader in the MENA (Middle East North Africa) region. JULPLHAR is thus present in the United Arab Emirates (Bahrain, UAE, Oman, Qatar), in the Middle East (Saudi Arabia, Iraq, Jordan, Kuwait, Syria, Yemen,) and in North Africa (Algeria, Egypt, Morocco, Libya, Tunisia) as well as in Africa (Mauritania). Moreover, the agreement with JULPHAR opens to Quantum's molecule the countries of the Commonwealth of Independent States (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Turkmenistan, Tajikistan, Ukraine) as well as Turkey. In addition, JULPHAR will receive the rights to manufacture firibastat for its various markets. In return, Quantum will receive upfront and milestone payments of € 17.73 million ($ 20 million) as well as royalties on future sales. Given the stage of development of firibastat, we believe that the royalty rate Quantum should receive would be around 10 percent, similar to what was negotiated in the Biolab Sanus agreement.

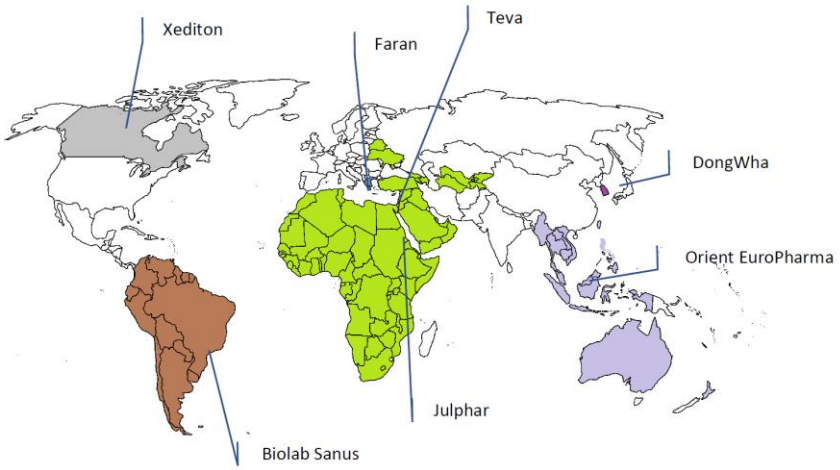
JULPHAR maintains a product portfolio that targets major therapeutic segments, including endocrinology, anti-infectives, cardiology and gastroenterology, OTC products, nephrology, dermatology, respiratory, metabolic and burns and wounds treatment. In addition, the Company has a network of more than 10 manufacturing facilities and a logistics network. The Company has approximately 800 products in various dosage forms and more are in development. The Company's subsidiaries include Mena Cool FZE, which deals with transportation, and JULPHAR Pharmaceuticals PLC, which deals with drug manufacturing, packaging materials and packaging. The group generated in 2020, € 140 million in a very significant increase compared to 2019 (€ 72.8 million).

Teva, the other partner for the Middle East

In November, Quantum Genomics approached Teva Israel, a subsidiary of Teva Pharmaceuticals Industries Ltd. to establish an exclusive licensing agreement covering primarily the Israeli market. Under the agreement, Quantum is entitled to receive € 9.74 million ($11 million) in upfront and milestone payments as well as royalties of between 25% and 30% of future sales. With this agreement, Quantum gets closer to a player that is now the 14th largest pharmaceutical company in the world and that generated, in 2020, $ 16.7 billion (€ 14.78 billion) in sales with an EBITDA of $ 4.6 billion (€ 4.07 million).

While Copaxone™ with $ 1.33 billion in revenues (€ 1.17 billion) remains the spearhead of Teva's pipeline, the group is looking for new growth drivers, as guidance for 2021 shows a very weak evolution of sales to $ 16.4-16.8 billion (€ 14.51-14.87 billion).

The agreement with Teva for its home market, Israel, could represent a growth driver for Quantum Genomics, which would have access to the global commercial power of Teva Pharmaceuticals. But it is also a real opportunity for Teva Pharmaceuticals, which has access to an innovative, first-in-class molecule in an indication where innovation is rare and with a strategy of in-depth transformation of the indication.



La stratégie de développement de Quantum Genomics apparaît clairement sur la carte ci-dessus et semble parfaitement en marche, puisqu'une bonne partie du pourtour méditerranéen est couverte par l'intermédiaire de Faran (Grèce), de Teva Israël (Israël) et JULPHAR (Moyen Orient-Afrique du Nord en marron). Pour le reste du monde, Biolab Sanus est en charge de l'Amérique latine (en gris) depuis sa base brésilienne, quand Xediton Pharmaceuticals couvre le Canada (en jaune). En Asie du Sud Est, DongWha et Orient EuroPharma couvrent respectivement la Corée du sud et Taiwan, le sud-est asiatique, l'Australie et la Nouvelle Zélande (en bleu).

Une multiplicité de partenariats

Quantum Genomics avait, avant la signature des accords JULPHAR et Teva, 5 partenaires distincts pour des régions spécifiques (cf. carte plus haut). Le montant était alors de $ 82,15 millions (72,72 M€). Avec les deux derniers partenariats (JULPHAR et Teva), le montant global s'élève à $ 113,15 millions (100,36 M€). Par ailleurs, les potentielles montants de redevance que les partenaires de commercialisation devront verser à Quantum sont pour la plupart à « double-digit » à savoir supérieur à 10% et s'élèvent même 25-30% pour le contrat Teva.

Ces différentes alliances stratégiques offrent aux différentes entreprises ayant choisi de se rapprocher de Quantum la possibilité d'investir conjointement dans le développement d'un projet commun en accord avec leurs stratégies respectives. Les critères de succès sont très certainement : l'engagement fort qu'elles exigent mais, aussi l'existence d'un point final conjointement prédéfini (durée, niveau d'investissement/rendement, etc.).

Des marchés de et en croissance

Grâce à ces deux nouveaux accords de licence et de production, Quantum Genomics voit sa molécule se positionner sur de nouveaux marchés que nous pouvons définir comme des marchés en croissance. Car bien qu'avec une population relativement jeune (moyenne d'âge : 26,8 ans) et un peu plus de 484 millions de personnes *(Unicef, MENA-GEN 2030),* la région MENA (Moyen Orient-Afrique du Nord) est fortement touchée par l'hypertension. En effet, ce n'est pas moins d'un demi-million de décès par an qui surviennent avec comme cause primordiale, l'hypertension artérielle. Avec aux premiers chefs, une alimentation riche en graisses, en sodium, une consommation de tabac élevée ainsi que des modes de vies relativement sédentaires, on observe que la prévalence de cette pathologie n'a pas diminué, puisque l'hypertension artérielle demeure donc la deuxième cause de décès dans la région.

Selon certaines données de l'OMS, le taux d'hypertension dans la population âgée de 30 à 79 ans serait de 34% chez les hommes et de 32% chez les femmes (*Nguyen & Chow, Lancet, 2021*).

Quantum Genomics' development strategy can be clearly seen on the map above and seems to be well underway, since a good part of the Mediterranean region is covered through Faran (Greece), Teva Israel (Israel) and JULPHAR (Middle East-North Africa in brown). For the rest of the world, Biolab Sanus is in charge of Latin America (in grey) from its Brazilian base, while Xediton Pharmaceuticals covers Canada (in yellow). In South East Asia, DongWha and Orient EuroPharma cover respectively South Korea and Taiwan, South East Asia, Australia and New Zealand (in blue).

A multiplicity of partnerships

Prior to the signing of its latest agreements with JULPHAR and Teva, Quantum Genomics had five separate partners for specific regions (see map above). The amount was then $ 82.15 million (€ 72.72 million). With the two latest partnerships (JULPHAR and Teva), the total amount is $ 113.15 million (€ 100.36 million). In addition, the potential royalty amounts to be paid by the marketing partners to Quantum are mostly "double-digit", i.e., higher than 10%, and even amount to 25-30% for the Teva contract.

These different strategic alliances offer the different companies that have chosen to get closer to Quantum the possibility to jointly invest in the development of a common project in line with their respective strategies. The criteria for success are certainly the strong commitment they require, but also the existence of a jointly predefined end point (duration, level of investment/return, etc.).

Growing markets

Thanks to these two new licensing and production agreements, Quantum Genomics is positioning its molecules in new markets that we can define as growth markets. Although the MENA region (Middle East and North Africa) has a relatively young population (average age 26.8 years) and just over 484 million people (*UNICEF, MENA-GEN 2030*), it is heavily affected by hypertension. Indeed, no less than half a million deaths per year occur due to high blood pressure. With a diet rich in fat and sodium, a high consumption of tobacco and relatively sedentary lifestyles, the prevalence of this pathology has not decreased, since hypertension remains the second leading cause of death in the region.

According to WHO data, the rate of hypertension in the population between 30 and 79 years of age is 34% in men and 32% in women (*Nguyen & Chow, Lancet, 2021*).

Par ailleurs, ces mêmes auteurs mentionnent des taux de traitement moyen de 38% chez les hommes et 47% chez les femmes et des taux de contrôle de l'hypertension de 20% toutes populations confondues. Sur cette base, on peut estimer que le nombre de personnes présentant une hypertension (hommes et femmes confondues) au sein de la population MENA se situerait autour de 186 millions (personnes de 24 ans à plus de 65 ans). Par ailleurs, en s'appuyant sur certaines données de prévalence de l'hypertension résistante (10,25% des cas d'hypertension observée) (*Noubiap et al., Heart, 2019*), le nombre de patients potentiellement éligibles au firibastat en région MENA serait de près de 8,0 millions en comptabilisant les personnes dont l'hypertension est connue, documentée et médicamentée.

En outre, la Communauté des Etats Indépendants (CEI) avec un peu plus de 94 millions de personnes est aussi une part importante de l'accord signé entre Quantum Genomics et JULPHAR. En effet, JULPHAR, grâce à son réseau commercial et de distribution, est en capacité de lancer et de soutenir la commercialisation du firibastat dans ces pays. Si l'on admet les hypothèses suivantes : un taux de prévalence de la pathologie (HTN) de 30% au sein de la population générale, un taux de survenue de l'HTN Résistante / Difficile-à-traiter d'environ de 10,25% des hypertendus, cela nous donne un nombre de patients potentiellement éligible au firibastat de l'ordre du million.

En Israël, avec une population d'environ 9,3 millions de personnes, le taux de prévalence standardisée au sein de cette population serait de 32,5%, soit près de 3 millions de personnes qui souffriraient d'hypertension artérielle. Selon la littérature *(Weitzman et al., Hypertension, 2014*), le taux de patients hypertendus « réellement » résistants aux traitements serait de 2,2%, soit environ 70 000 patients. D'autres études évoquent un taux de 10% pour les hypertendus résistants, soit près de 310 000 patients : une prévalence pas très éloignée de celles d'autres pays occidentaux.

La résistance, un concept difficile à appréhender ?

Plusieurs articles récents dans la suite logique des travaux de consensus de 2018 (Williams et al., Eur. Heart J. 2018) s'interrogent sur le phénomène de résistance aux traitements de la part des patients hypertendus. Ainsi Isik et al., dans Isik et al., J Hum. Hypertens. 2021 ; interrogent l'influence de l'hypertension (Non contrôlée ou Résistante) dans la mortalité observée à l'hôpital par Covid-19. Ensuite, un autre article du Journal of Human Hypertension d'octobre 2021 (*Alsharari et al., J Hum. Hypertens. 2021*) pose la question du diagnostic de l'hypertension notamment lorsqu'elle est concomitante avec une maladie rénale. Ce qui permet d'interroger la « Road Map » de la Gestion des hypertensions résistantes au regard des nouvelles classifications proposées. Les réunions de guidelines publiées en 2018, ont fait émerger différents phénotypes associés au non-contrôle de la pression artérielle.

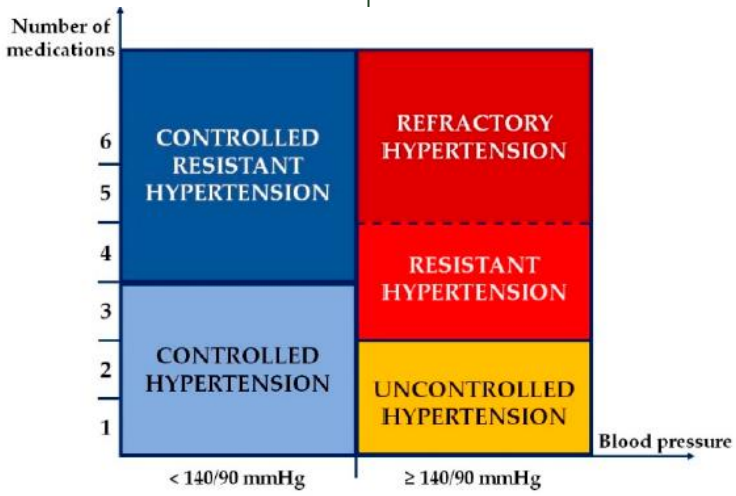
Moreover, these same authors mention average treatment rates of 38% in men and 47% in women and hypertension control rates of 20% for all populations combined. On this basis, it can be estimated that the number of people with hypertension (men and women combined) in the MENA population is around 186 million (people aged 24 to over 65 years). Furthermore, based on some data on the prevalence of resistant hypertension (10.25% of observed hypertension cases) (Noubiap et al., Heart, 2019), the number of patients potentially eligible for firibastat in MENA would be around 8.0 million by counting those with known, documented, and medicated hypertension.

In addition, the Commonwealth of Independent States (CIS) with a population of just over 94 million people is also an important part of the agreement signed between Quantum Genomics and JULPHAR. Indeed, JULPHAR thanks to its commercial and distribution network is able to launch and support the commercialization of firibastat in these countries. Assuming a prevalence rate of 30% in the general population and a rate of occurrence of resistant/difficult-to-treat hypertension of about 10.25% of hypertensives, the number of patients potentially eligible for firibastat is in the order of one million.

In Israel, with a population of about 9.3 million, the standardized prevalence rate in this population would be 32.5%, or nearly 3 million people with hypertension. According to the literature (Weitzman et al, Hypertension, 2014), the rate of "truly" treatment-resistant hypertensive patients would be 2.2%, or approximately 70 000 patients. Other studies suggest a rate of 10% for resistant hypertensives, or nearly 310,000 patients: a prevalence not far from those in other Western countries.

Resistance, a difficult concept to grasp?

Several recent articles in line with the 2018 consensus work (Williams et al., Eur. Heart J. 2018) question the phenomenon of treatment resistance by hypertensive patients. Thus, Isik et al, in Isik et al, J Hum. Hypertens. 2021; question the influence of hypertension (Uncontrolled or Resistant) in the mortality observed in the hospital by Covid-19. Then, another article in the Journal of Human Hypertension of October 2021 (*Alsharari et al., J Hum. Hypertens. 2021*) raises the question of the diagnosis of hypertension, especially when it is concomitant with renal disease. This allows us to question the "Road Map" of the Management of resistant hypertension in light of the new proposed classifications. The guideline meetings published in 2018, brought out different phenotypes associated with non-control of blood pressure.



Ainsi, dans les quadrants droits de la figure précédente pour lesquelles la pression mesurée est supérieure à 140/90 mmHg, on distingue :

- L'hypertension non contrôlée, qui nécessite de 1 à 2 médicaments antihypertensifs ;
- L'hypertension résistante, qui exige l'usage de 3 à 4 molécules pour obtenir un contrôle ;
- L'hypertension réfractaire, qui demande plus de 4 molécules distinctes pour être contrôler.

Par ailleurs, la grande majorité des travaux réalisés aujourd'hui s'attache à étudier les mécanismes de la dénervation ou du moins la réduction de l'influence du système nerveux sympathique sur la pression artérielle. La réduction pharmacologique des hypertensions (HTN) et à fortiori des HTN résistantes est portée principalement par Quantum Genomics avec le firibastat. D'autres sociétés travaillent aussi sur cette approche, mais il nous semble que le firibastat porte plus d'espoir que les autres approches. Ce qui fait de Quantum une véritable opportunité d'investissement.

Un pipeline bien équilibré…

Le portefeuille de produits de Quantum Genomics comprend le firibastat décliné sur 2 indications majeures : l'hypertension artérielle Difficile-à-traiter / Résistante et l'insuffisance cardiaque (cf. : figure suivante).

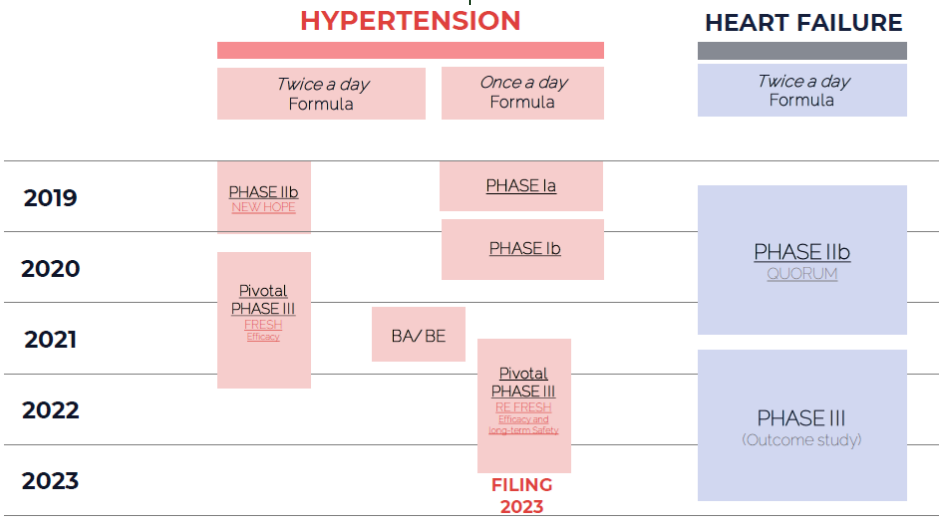
Thus, in the right quadrants of the previous figure for which the measured pressure is greater than 140/90 mmHg, we distinguish:

- Uncontrolled hypertension, which requires 1 to 2 antihypertensive drugs;
- Resistant hypertension, which requires the use of 3 to 4 molecules to obtain control;
- Refractory hypertension, which requires more than 4 different molecules to be controlled.

In addition, most of the work carried out today is focused on studying the mechanisms of denervation or at least the reduction of the influence of the sympathetic nervous system on blood pressure. The pharmacological reduction of hypertension (HTN) and especially of resistant HTN is mainly carried out by Quantum Genomics with firibastat. Other companies are also working on this approach, but it seems to us that firibastat holds more hope than the other approaches. This makes Quantum a real investment opportunity.

A well-balanced pipeline...

Quantum Genomics' product portfolio includes firibastat for two major indications: Difficult-to-treat/Resistant hypertension and heart failure (see figure below).



…par les études pivot REFRESH et FRESH…

Cette phase d'étude, qui a débuté en janvier 2021, s'attache à mesurer l'efficacité à 3 mois d'une dose unique quotidienne de 1 000 mg de firibastat pour traiter les patients présentant une hypertension Difficile-à-traiter/Résistante (HTN $_{DAT/R}$). Par ailleurs, cette étude devrait aussi donner des informations sur la sécurité d'emploi de la molécule à long terme. En effet, l'hypertension et à fortiori l'HTN$_{DAT/R}$ sont des pathologies chroniques pour lesquelles le recours à une médication à vie, lorsque le diagnostic est posé. Ce sera la conjonction des résultats des deux études pivots FRESH et REFRESH qui devraient conduire à l'enregistrement auprès des agences.

REFRESH mesurera l'effet du firibastat (1 000 mg) sur la réduction de la pression artérielle systolique mesurée automatiquement (AOBP) dans la population ayant reçu la molécule + son traitement habituel contre la population n'ayant reçu que le traitement habituel. Si le recrutement du premier patient a bien eu lieu au T2 2021, les premiers résultats (efficacité et sécurité à 6 mois) sont attendus mi-2023, avec des demandes d'AMM « dans la foulée » en 2023 et une possible mise sur le marché en 2024.

Par ailleurs, Quantum Genomics attend les premiers résultats d'efficacité de FRESH pour le T2 2022. Pour cette étude, qui s'inscrit dans la continuité du travail initié avec NEW HOPE, le critère principal d'évaluation de FRESH est la réduction de pression artérielle systolique mesurée automatiquement (AOBP) par rapport à la valeur de départ.

...by the REFRESH and FRESH pivotal studies...

This study phase, which began in January 2021, is designed to measure the efficacy at 3 months of a once-daily dose of 1,000 mg of firibastat to treat patients with Difficult-to-Treat/Resistant Hypertension (HTN DAT/R). This study should also provide information on the long-term safety of the compound. Indeed, hypertension and especially HTNDAT/R are chronic pathologies for which lifelong medication is required once the diagnosis is made. It will be the combination of the results of the two pivotal studies FRESH and REFRESH that should lead to registration with the agencies.

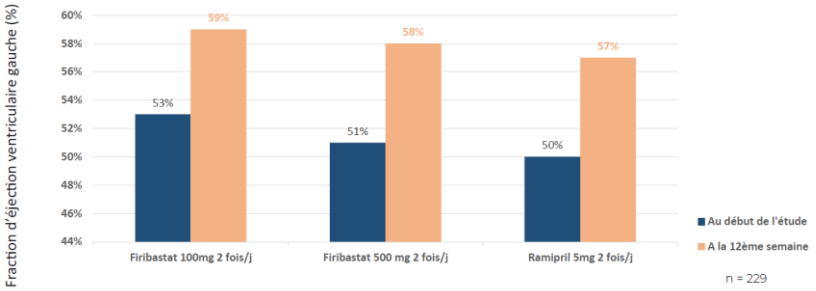
REFRESH will measure the effect of firibastat (1,000 mg) on the reduction of automatically measured systolic blood pressure (AOBP) in the population that received the compound + its usual treatment versus the population that received only the usual treatment. If the first patient is enrolled in Q2 2021, the first results (efficacy and safety at 6 months) are expected in mid-2023, with marketing authorization applications "on the way" in 2023 and a possible market launch in 2024.

In addition, Quantum Genomics expects the first efficacy results from FRESH in Q2 2022. For this study, which is a continuation of the work initiated with NEW HOPE, the primary endpoint of FRESH is the reduction in automatically measured systolic blood pressure (AOBP) from baseline.

…et une autre indication majeure, l'insuffisance cardiaque (IC)

Les premiers résultats de l'étude QUORUM (Quantum Genomics QCG001 or Ramipril after acute Myocardial infarction to prevent left ventricular dysfunction), ont été publiés en 2021. Ceux-ci montrent plusieurs choses très intéressantes notamment que :

- Le firibastat est au moins aussi efficace que le ramipril pour prévenir la dégradation de la fraction d'éjection du ventricule gauche post-infarctus du myocarde. Cette non-infériorité ouvre des perspectives pour la molécule non seulement pour un potentiel enregistrement mais pour la stratégie thérapeutique (monothérapie, combinaison, maintenance) ;



Variation de la fraction d'éjection ventriculaire gauche évaluée par IRM cardiaque

- Le firibastat est bien toléré, avec très peu d'effets secondaires (10%) observés (éruptions cutanées, prurit) du même ordre que celles observées avec le ramipril (5% dont un angiocœdème). Par ailleurs, tout comme lors des précédentes études, aucune dégradation de la fonction rénale, ni pulmonaire n'a été observée, ce qui traduit la bonne tolérance à la molécule.

- Le firibastat, qui est déjà en essai pour l'hypertension améliore, de manière significative le profil tensionnel de patients, puisqu'aux deux doses de firibastat (100 et 500 mg), le retour à la pression artérielle cible est accéléré par rapport au ramipril. Les Inhibiteurs de l'Enzyme de Conversion, qui sont aujourd'hui le traitement de référence de l'IC, sont connus pour induire des phénomènes d'hypotension.

QUORUM a été un succès (critère d'évaluation atteint) et a démontré un certain nombre de propriétés qui font de firibastat une alternative thérapeutique crédible pour l'IC et plus précisément pour les patients ayant une FEVG très dégradée.

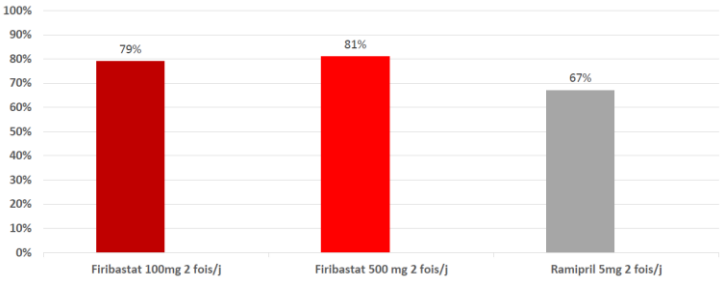
Le cardiovasculaire : un secteur de plus en plus actif

Depuis plusieurs années, le secteur des maladies cardiovasculaires affiche un regain d'activité en termes d'opérations financières et de consolidation. Ainsi, le 13 décembre 2021, Pfizer s'est porté acquéreur d'Arena Pharmaceuticals pour $ 6,7 milliards (5,94 Md€), une société spécialiste de petites molécules contre notamment l'hypertension artérielle pulmonaire. En début 2021, Philips a racheté BioTelemetry Inc. l'un des leaders du suivi cardiaque pour $ 2,3 milliards (2,04 Md€). Auparavant, en octobre 2020, BMS a racheté la société spécialisée dans les pathologies cardiovasculaires, MyoKardia pour $ 13 milliards (11,53 Md€). Advanz Pharma s'est porté acquéreur de Correvio Pharma en mai 2020, pour $ 76 millions, soit 67,4 M€. En 2019, Novartis avait mis sur la table $ 9,7 milliards (8,6 Md€) pour acquérir The Medicines Co et son inclisiran, un anticholestérol actif sur les LDL. Plusieurs IPOs ont eu lieu au NASDAQ comme celle de Tenaya Therapeutics ($ 150 millions) ou de sociétés de santé digitale comme HeartFlow, Modernizing Medicine, Livongo.

…and another major indication, heart failure (HF)

The first results of the QUORUM study (Quantum Genomics QCG001 or Ramipril after acute Myocardial infarction to prevent left ventricular dysfunction), were published in 2021. These show several very interesting things including that:

- Firibastat is at least as effective as ramipril in preventing the deterioration of left ventricular ejection fraction after myocardial infarction. This non-inferiority opens perspectives for the molecule not only for a potential registration but also for the therapeutic strategy (monotherapy, combination, maintenance);



% de patients ayant atteint la dose cible de traitement à la fin de l'étude

- Firibastat is well tolerated, with very few side effects (10%) observed (skin rashes, pruritus) of the same order as those observed with ramipril (5% including angioedema). In addition, as in previous studies, no degradation of renal or pulmonary function was observed, which reflects the good tolerance of the molecule.

- Firibastat, which is already being tested for hypertension, significantly improves the blood pressure profile of patients, since at both doses of firibastat (100 and 500 mg), the return to target blood pressure is accelerated compared to ramipril. Conversion Enzyme Inhibitors, which are now the reference treatment for heart failure, are known to induce hypotension.

QUORUM has been a success (endpoint met) and has demonstrated several properties that make firibastat a credible therapeutic alternative for CHF and more specifically for patients with a very degraded LVEF.

Cardiovascular: an increasingly active sector

For several years now, the cardiovascular sector has been showing renewed activity in terms of financial transactions and consolidation. On December 13, 2021, Pfizer acquired Arena Pharmaceuticals for $ 6.7 billion (€ 5.94 billion), a company specialist on small molecules for pulmonary hypertension. In early 2021, Philips bought BioTelemetry Inc. one of the leaders in heart monitoring for $ 2.3 billion (€ 2.04 billion). Earlier, in October 2020, BMS acquired the cardiovascular disease company MyoKardia for $ 13 billion (€ 11.53 billion). Advanz Pharma acquired Correvio Pharma in May 2020 for $ 76 million, or € 67.4 million. In 2019, Novartis had put on the table $ 9.7 billion (€ 8.6 billion) to acquire The Medicines Co and its inclisiran, an anticholesterol compound active on LDL. Several IPOs have taken place on the NASDAQ such as Tenaya Therapeutics ($150m) or digital health companies such as HeartFlow, Modernizing Medicine, Livongo.

Valuation

Risk-Adjusted NPV

The Risk-Adjusted NPV method is the most suitable for establishing a tangible estimate of a set of development programs for new drugs such as Quantum Genomics. We may consider in our models several key parameters such as status, probability of success, estimated future sales/royalty income and associated risk.

Discount rate calculation

The discount rate results from the weighted average rate between the capital cost and the cost of financial debt. The cost of capital is calculated based on the CAPM model to which is added a Small Cap risk premium according to the following formula:

Cost of capital = Rf +beta * (Rm-Rf) + Small Caps risk premium

Rf: risk free rate
(Rm-Rf): stock market risk premium

Depending on the company size, we add a Small Caps premium to the cost of capital. The Small Caps premium is calculated according to six criteria which are objectively evaluated. For each criterium, there are five increments from – de ++. Each move upwards adds 20 basis points to the cost of capital.

Please find below the criteria table:

Criterium	Notation scale				
	++	+	=	-	--
Company governance [1]	4	3	2	1	0
Liquidity[2]	[66 % ; 100 %]	[33 % ; 66 %[	[15 % ; 33 %[	[5 % ; 15 %[	[0 % ; 5 %[
Revenues size (€m)	[150 ; +∞[	[100 ; 150[	[50 ; 100[	[25 ; 50[	[0 ; 25[
Operating profitability	[25 % ; 100 %]	[15 % ; 25 %[	[8 % ; 15 %[	[3 % ; 8 %[	[0 % ; 3 %[
Gearing	]-∞ % ; -15 %]	]-15 % ; 15 %]	]15 % ; 50 %]	]50 % ; 80 %]	]80 % ; +∞[
Clients risks [3]	[0 % ; 10 %]	]10 % ; 20 %]	]20 % ; 30 %]	]30 % ; 40 %]	]40 % ; 100 %]

In the case of Quantum Genomics, we obtain the following matrix:

	++	+	=	-	--	Prime Small Caps
Company Governance						0,40%
Liquidity						0,60%
Revenus size (€m)						1,00%
Operating Profitability						1,00%
Gearing						0,20%
Client Risks						0,20%
TOTAL						**1,40%**

Based on the negative risk free of 0.51% (3 months mean of OAT TEC-10 – Source: Agence France Trésor), a market risk premium of 9.30% (source: Fairness Finance, Market Risk Premia), a beta of 0.89, a Small Caps risk premium of 5.2%, we get to a discount rate of 11,91%.

Risk-free Rate	Market Premium	Beta	Small Caps Premium	Cost of capital	Cost of Debt	Financial Leverage	Tax rate	WACC
-0,51%	9,30%	0,89	1,4%	9,1%	0,0%	-24%	25,0%	**11,91%**

Source: Agence France Trésor, Fairness Finance, Market Risk Premia, Damodaran, Genesta estimates

[1] Company's governance is evaluated through the 4 following criterions: separation of functions between president and top management or functioning as a supervisory board and a board of directors; presence of independent members in the board of trustees or in the supervisory board; presence of censors or control board; existence of specialized committees.
[2] Percentage of capital exchanged in the last 12 months
[3] Sales parts represented since by the 5 most important clients.

The Risk-Adjusted Net Present Value (rNPV) method was used since we believe it is the most appropriate method for such a company. The risk factor was calculated considering the probability for firibastat to succeed in each clinical development stage (see following table "Typical transition rate for drug development" updated from Keagan, Wiley Finance, 2008.

Typical transition rates for drug development

Phase	Transition Rate	Probability to reach the market
Phase IIa	70-80%	20-35%
Phase IIb	70-80%	30-45%
Overall Phase II	50-65%	20-45%
Phase III	50-65%	45-55%
Registration	90%	90%

Source: Karl Keegan, Wiley Finance (2008)

Enterprise value calculation

We assume that firibastat will be launched in 2023 for hypertension indication. Firibastat targets the resistant hypertension, a sub-population of hypertensive patients, characterized by a non-controlled hypertension even when a triple or quadruple therapy is used. According to different studies these treatment-resistant hypertensive patients represent 10,25% to 30% of resistant hypertensive people. For valuation purposes, we only considered the lowest population representation (10.25%) and the region where Quantum was granted with partnerships: LATAM with BioLab Sanus, MENA with JULIPHAR, Israel with Teva, South Korea with DongWha, Canada with Xediton Pharma, Southeast Asia + Taiwan, Australia, New Zealand with Orient EuroPharma, Greece with Faran. Assuming a 10% to 20% penetration rate depending on region, we estimate that firibastat can target more than 6 million people annually in these markets at peak sales.

Hypertension	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Total sales	0,0	0,0	0,0	97,0	194,0	388,7	638,0	1 278,5	1 753,1	1 888,9
Upfront	2,7			0,0	0,0	0,0	0,0	0,0	0,0	0,0
Milestones	2,6	7,7	38,5	63,9			0,0	0,0	0,0	0,0
Royalties	0,0	0,0	0,0	19,4	38,8	77,7	127,6	255,7	350,6	377,8
QG Total revenues	**5,3**	**7,7**	**38,5**	**83,3**	**38,8**	**77,7**	**127,6**	**255,7**	**350,6**	**377,8**
Clinical cost	7,6	16,9	7,6	5,0	5,0	0,0	0,0	0,0	0,0	0,0
Inserm Royalties	0,0	0,0	0,0	4,2	1,9	3,9	6,4	12,8	17,5	18,9
other costs	3,7	4,3	12,0	27,4	16,5	33,0	54,2	108,7	149,0	160,6
Total Cost	**11,4**	**21,2**	**20,7**	**41,6**	**28,4**	**36,9**	**60,6**	**121,5**	**166,5**	**179,4**
EBITDA	**(6,1)**	**(13,5)**	**17,8**	**41,7**	**10,4**	**40,8**	**67,0**	**134,2**	**184,1**	**198,3**
Taxes	0,0	(1,8)	2,5	6,7	2,3	5,9	9,7	19,5	26,7	28,8
Cash Flows	(6,1)	(11,7)	15,3	35,0	8,1	34,9	57,3	114,8	157,4	169,6
Likelihood	75,0%	75,0%	75,0%	90,0%	90,0%	41,0%	41,0%	41,0%	41,0%	41,0%
Risk Adjusted CF	**(4,6)**	**(8,8)**	**11,5**	**31,5**	**7,3**	**14,3**	**23,5**	**47,1**	**64,5**	**69,5**

Quantum Genomics, which is continuing a pivotal phase III clinical trial of resistant hypertension, has already license the drug to regional partners. As a result of the initiation of this pivotal trial, the scope of the future transaction has changed. Quantum, which is already in discussion with large and medium-sized pharmaceutical companies but also biopharmaceuticals, should obtain different conditions in case of success of its clinical trial. As a result, revenue forecasts have been modified based on milestones and royalty payments. Our assumptions consider a royalty rate between 25% to 30% on total sales. The total upfront and milestones were estimated at date € 100.49 million. Using our 11.91% discount rate, we obtain the following Risk-Adjusted cashflow statement for the period 2021E – 2030E and the current valuation for the hypertension programme has a net value of € 104 million.

We model the target market as the 10% of heart failure consecutive to a myocardial infarction. This penetration rate is relatively conservative, but we assume that firibastat could gain a higher peak penetration (15-25%) related to the severity of the disease and the strong unmet medical need. For valuation purposes, we only considered the following 3 regions: European Union, the United States and Canada, and Asia. We estimate that firibastat can target more than 2.5 million people annually in these markets, with an annual peak sale of € 1,891 million.

Our revenue forecast was calculated based on license at the end of phase 2b with considered milestones and royalty payments. Our hypotheses consider a 15% royalty rate on total sales (a conservating rate regarding royalties rates obtained for hypertension). The total milestones were estimated at € 131 million. Using our 11.91% discount rate, we obtain the following Risk-Adjusted cashflow statement for the period 2019E – 2028E and a current valuation for the heart failure programme of € 73.3 million.

Heart failure	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Total sales	0,00	0,00	0,00	0,00	130,02	390,85	913,80	1 308,04	1 572,79	1 891,12
Milestones	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Royalties	0,00	0,00	0,00	0,00	19,50	58,63	137,07	196,21	235,92	283,67
QG Total revenues	**0,00**	**0,00**	**0,00**	**0,00**	**19,50**	**58,63**	**137,07**	**196,21**	**235,92**	**283,67**
Clinical cost	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Filing										
Launch										
COGS	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SG&A										
Inserm Royalties	0,00	0,00	0,00	0,98	5,05	6,85	11,93	11,80	15,24	14,92
Overhead	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total Cost	**0,00**	**0,00**	**0,00**	**0,98**	**5,05**	**6,85**	**11,93**	**11,80**	**15,24**	**14,92**
EBITDA	**0,0**	**0,0**	**0,0**	**(1,0)**	**14,4**	**51,8**	**125,1**	**184,4**	**220,7**	**268,7**
Taxes	2,98	0,00	2,81	2,45	12,72	17,25	30,04	29,70	38,38	37,57
Cash Flows	(3,0)	0,0	(2,8)	(3,4)	1,7	34,5	95,1	154,7	182,3	231,2
Likelihood	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%
Risk Adjusted CF	**(0,7)**	**0,0**	**(0,7)**	**(0,9)**	**0,4**	**8,6**	**23,8**	**38,68**	**45,57**	**57,79**

As Quantum Genomics must face multiple possibilities with firibastat in heart failure: 1) to license the drug to a partner at the end of the phase 2b (QUORUM) clinical trials, 2) to conduct a phase 3 clinical trial and to license at this time with higher upfront, milestones and royalties' rates;

For the period following the forecasts, we obtain the following table (in €m):

	FCF Growth	Value	%
Hypertension (1-10 year period)		104,4	18,9%
Hypertension (11-20 years period)	0,0%	373,7	67,7%
Heart Failure		73,7	13,3%
Total		**551,7**	100,0%

Source: Quantum Genomics, Genesta estimates

Thus, Quantum Genomics enterprise value stands at € 551.7 million.

Price per share calculation

The table below details the final calculation of equity value per share.

rCF HTN/HF	178,1
+ Discounted terminal value	373,7
+ Financial assets	0,3
+ Assets consolidated on an equity basis	0,0
- Provisions	0,0
- Net Financial debt	-27,1
- Minorities	0,0
+ Discounted tax loss carries forward	0,0
= Equity value (in EUR million)	579,2
Number of shares (in million)	27,348
Share valuation (in EUR)	**21,18**

Source: Quantum Genomics, Genesta estimates

Therefore, the use of the Risk-Adjusted NPV method values Quantum's stock at € 21.18 per share, representing an upside of + 395,3 % compared to the last closing price of € 4.28 on December 10, 2021.

Comparable companies' valuation (peers)

Comparable selection

Quantum Genomics designs, develops, and will market a new first-in-class drug treating resistant-hypertension and heart failure. Most of the companies in this sector are developing medical devices to correct hypertension based on stimulation of parasympathetic systems such as AbioMed, BioSig Technologies. Some are involved in the development of cell therapies to correct heart failure (Athersys) or new approach (total artificial heart such as Carmat, new muscle activators or inhibitors such as Cytokinetics).

AbioMed Inc. : Founded back in 1981 in Danvers, Massachusetts, AbioMed is a medical device company developping, manufacturing et comercializing external and implatable circulatory support devices. Abiomed's devices could assit ou replace the pumping function of the failing heart. As of 2019, the company had secured five FDA approvals and 715 patents with 622 pending. For fiscal year 2019, AbioMed reported $ 769.4 million in revenue and reported diluted earnings per share was $ 5.61 for the year.

Athersys Inc. : Athersys is a clinical-stage biotechnology company developing novel and proprietary best-in-class therapies designed to extend and enhance the quality of human life. Athersys is active in regenerative Medicine sector and is developing MultiStem®, a patented, adult-derived "off-the-shelf" stem cell therapy platform, for numerous disease indications in areas of neurological, inflammatory & immune, and cardiovascular disease areas, as well as other critical care indications where there is substantial unmet medical need due to the limitations in standard of care.

BioSig Technologies Inc.: BioSig Technologies is a commercial stage medical device company that has developed a proprietary technology platform to extracts information from physiologic signals. Their initial emphasis is on providing intracardiac signal information to electrophysiologists during electrophysiology studies, cardiac catheter ablation procedures for atrial fibrillation, and ventricular tachycardia.

Carmat SA : Created in 2008, Carmat is a French biomedical company developing an orthotopic, self-regulating, bioprosthetic artificial heart. The company will provide cardiologists with innovative technologies that save lives and improve the quality of life for patients with advanced heart failure. Implantation of a Total Artificial Heart became the primary alternative to heart transplants.

Cytokinetics Inc. : Founded in 1997 Cytokinetics, Inc. is a publicly traded biopharmaceutical company based in California, that develops muscle activators and muscle inhibitors as potential treatments for people with diseases characterized by impaired or declining muscle function. Among them, Omecamtiv mecarbil, a cardiac muscle activator for the potential treatment of heart failure. This molecule was granted, in May 2020, a fast-track designation by the FDA for the treatment of chronic heart failure with reduced ejection fraction.

Ligand Phamaceuticals Inc. : Created in 1987, as Progenix Inc., Ligand Pharmaceuticals developed an expertise on orphan nuclear receptors. Ligand Pharmaceutical develops or acquires royalty-generating assets comprising numerous technologies, therapies and drugs. The drugs for which it receives royalties include Kyprolis, Promecta, Melphalan and Baxdela

Neovasc Inc. : This Canadian biotech company, headquartered in Vancouver, B.C. Canada, we are a publicly traded company, listed on Nasdaq and the Toronto Stock Exchange. Their product includes the Tiara™ technology in development for the transcatheter treatment of mitral valve disease, the Neovasc Reducer™ for the treatment of refractory angina.

Palatin Technologies Inc. : Incorporated in 1986, and based in New Jersey, Palatin Technologies, Inc., a biopharmaceutical company, develops targeted receptor-specific therapeutics for the treatment of various diseases in the United States. it is developing PL3994, a natriuretic peptide receptor (NPR)-A agonist and synthetic mimetic of the endogenous neuropeptide hormone atrial natriuretic peptide for cardiovascular indications; and PL5028, an NPR-A and NPR-binder to treat cardiovascular and fibrotic diseases, including reducing cardiac hypertrophy and fibrosis. The company's lead product is Vyleesi, a melanocortin receptor (MCr) agonist for the treatment of premenopausal women with hypoactive sexual desire disorder.

Oxurion NV: Former Thrombogenics, Oxurion is a biopharamaceutical company developing develops next generation standard of care ophtalmic therapies, which are designed to better preserve vision in patients with retinal vascular disorders including diabetic macular edema (DME), the leading cause of vision loss in diabetic patients worldwide, as well as other conditions, including wet age-related macular degeneration (AMD) and retinal vein occlusion (RVO). Molecules developed: THR-149, a plasma kallikrein inhibitor; and THR-687, a pan-RGD integrin antagonist.

	Revenus 21	Revenus 22	Revenus 23	EBITDA 21	EBITDA 22	EBITDA 23	EBIT 21	EBIT 22	EBIT 23	RN 21	RN 22	RN 23
ABIOMED Inc.	902,0	1 041,3	1 234,7	245,4	292,4	365,2	220,5	264,6	337,0	171,5	208,9	261,4
Acutus Medical, Inc.	15,2	22,3	41,4	-82,9	-86,0	-78,5	-96,3	-94,8	-86,8	-91,5	-91,5	-85,0
Athersys Inc.	4,3	4,7	12,2	-75,8	-106,2	NS	-77,1	-83,8	-162,9	-70,0	-83,8	-162,7
BioSig Technologies Inc.	0,9	11,6	34,7	NS	NS	NS	-29,2	-23,3	-8,8	-28,0	-22,2	-7,7
Carmat SA	4,8	15,1	30,3	-41,9	-31,8	-20,3	-53,5	-52,3	-32,5	-53,6	-56,2	-23,6
Cytokinetics Inc.	18,8	26,5	71,1	-208,9	-287,3	-326,1	-202,5	-234,0	-256,9	-223,7	-249,9	-288,5
CVRx, Inc.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ligand Pharmaceuticals Inc.	238,4	159,1	191,7	135,8	77,1	NS	67,9	-3,2	26,1	91,2	55,1	82,9
Neovasc Inc.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Palatin Technologies Inc.	1,7	6,1	8,0	-26,1	-27,3	-30,1	-26,2	-27,3	-28,9	-26,0	-23,0	-28,9
Oxurion NV	0,5	0,3	0,0	NS	NS	NS	-32,4	-37,1	-60,1	-47,4	-41,7	-44,7

Source : Infront Analytics

	Market cap	Debt net	Minority	EV
ABIOMED Inc.	12 306,3	-401,7	0,0	11 904,5
Acutus Medical, Inc.	82,3	-30,1	0,0	52,2
Athersys Inc.	210,0	-31,3	0,0	178,7
BioSig Technologies Inc.	72,1	-10,8	0,0	61,3
Carmat SA	345,4	-39,1	0,0	306,4
Cytokinetics Inc.	2 676,5	-85,5	0,0	2 591,0
CVRx, Inc.	197,7	NS	0,0	NS
Ligand Pharmaceuticals Inc.	2 126,4	-385,0	0,0	1 741,4
Neovasc Inc.	38,0	9,2	0,0	47,2
Palatin Technologies Inc.	116,8	-73,8	0,0	43,0
Oxurion NV	77,7	-50,7	0,0	27,0

Source : Infront Analytics

Valuation

This table summarizes the ratio (EV/Sales) of comparable companies, the others ratio (EV/EBITDA, EV/EBIT, PE) were either not-meaningful or negatives:

	EV/Revenus 21	EV/Revenus 22	EV/Revenus 23	EV/EBIT 21	EV/EBIT 22	EV/EBIT 23
ABIOMED Inc.	13,20	11,43	9,64	53,99	44,99	35,32
Acutus Medical, Inc.	3,43	2,34	1,26	-0,54	-0,55	-0,60
Athersys Inc.	41,13	38,36	14,65	-2,32	-2,13	-1,10
BioSig Technologies Inc.	66,68	5,31	1,77	-2,10	-2,63	-6,96
Carmat SA	63,23	20,36	10,11	-5,73	-5,86	-9,42
Cytokinetics Inc.	137,63	97,71	36,46	-12,80	-11,07	-10,08
CVRx, Inc.	NS	NS	NS	NS	NS	NS
Ligand Pharmaceuticals Inc.	7,31	10,94	9,08	25,66	-546,37	66,62
Neovasc Inc.	NS	NS	NS	NS	NS	NS
Palatin Technologies Inc.	25,12	7,05	5,39	-1,64	-1,58	-1,49
Oxurion NV	59,20	81,89	NS	-0,83	-0,73	-0,45

Source : Genesta, Infront Analytics

This table displays the implied valuations of Quantum Genomics (in € million) according to the current valuation multiples of the comparable companies:

	Revenus 21	Revenus 22	Revenus 23
Quantum Genomics	5,3	7,7	38,5
Valorisation induite	273,6	264,0	452,3
	246,0	115,6	387,5
Valorisation moyenne / action	10,87		

Source : Genesta, Infront Analytics

In addition, given the difference between the average market capitalization of the companies making up the peer group retained and that of Implanet, we apply a size discount, based on the Eric-Eugène Grena model, and presented in the methodological note below, to obtain a more relevant valuation of the security.

Applied to Quantum Genomics, this method leads us to implement a slight size discount of -21,0% to the results mentioned above.

Capitalisation moyenne des comparables	EUR	1 659,0	m
Capitalisation non corrigée de la société	EUR	289,8	m
Rapport des capitalisations	17,5%		
Prime / Décote à appliquer	**-15,5%**		

After applying this discount, we obtain the following valuation (€/share):

Moyenne	**9,18**

The comparable method shows a value per share of between € 9.18, a potential increase in value of +114.7% compared to the closing price on December 10st 2021 of € 4.28.

Size discount/ Premium methodology

Considering the possible gap between the peers' average market capitalization and the company's, Genesta implements a discount, or a premium, inspired by the Eric-Eugène Grena's model, to obtain a more relevant valuation of the company.

Works led by Eric-Eugène Grena – SFAF member, former director of BNP Paribas Equity Research and former partner at Clinvest – showed that there exists a risk to implement peers valuation approach without considering the existence of large gaps between the size of the valuated company and the one of its peers.

Thus, it seems important to make a correction by calculating a discount or a premium applied to the estimated company if necessary. The study, which has been made on a conclusive sample, revealed a decrease in the PE ratios regarding the peers' size and that the correction should be of the same order of extent.

The approach followed by Genesta consists in:

1) Calculating the ratio between the estimated company's market capitalization and the one of its peers;
2) Implementing, as stated by the previously calculated ratio, a discount or a premium according to the abacus defined by Eric-Eugène Grena while taking care of using a linear regression between each increment;
3) Applying this discount or premium to the estimated market capitalization of the valuated company and thus refining the peers estimation's relevance.

Capitalization Ratio	Adjustement applied	
<2%	-40%	
2%	-34%	
5%	-26%	
10%	-20%	
20%	-14%	
30%	-10%	Discount
40%	-7%	
50%	-5%	
60%	-4%	
80%	-2%	
100%	0%	
120%	2%	
140%	4%	
150%	5%	
160%	7%	
170%	10%	Premium
180%	14%	
190%	20%	
195%	26%	
198%	34%	
>198%	40%	

Summary of financial statements

Simplified Income Statement

31/12 (M€)	2018	2019	2020	2021E	2022E	2023E
Revenues	**0,1**	**0,4**	**2,3**	**5,3**	**7,7**	**38,5**
% change	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Ebitda	**-13,3**	**-10,5**	**-13,5**	**-5,7**	**-12,5**	**27,3**
% change	*0,3*	*-0,2*	*0,3*	*-0,6*	*1,2*	*-3,2*
% of revenues	*ns*	*ns*	*-6,0*	*-1,1*	*-1,6*	*0,7*
Ebit	**-13,4**	**-10,8**	**-13,9**	**-5,8**	**-13,6**	**25,3**
% change	*0,3*	*-0,2*	*0,3*	*-0,6*	*1,4*	*-2,9*
% of revenues	*ns*	*ns*	*-6,1*	*-1,1*	*-1,8*	*0,7*
Financial Income and charges	**0,1**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**
Earnings before tax	**-13,3**	**-10,6**	**-13,7**	**-5,9**	**-13,8**	**25,1**
Income tax	**-1,5**	**-1,5**	**-2,1**	**-0,9**	**-2,1**	**3,8**
Tax rate %	*0,2*	*0,2*	*0,2*	*0,2*	*0,2*	*0,2*
Net Earnings	**-11,8**	**-9,1**	**-11,5**	**-5,0**	**-11,7**	**21,2**
% change	*0,3*	*-0,2*	*0,3*	*-0,6*	*1,3*	*-2,8*
% of revenues	*ns*	*ns*	*-5,1*	*-0,9*	*-1,5*	*0,6*

Balance Sheet – Mains items

31/12 (M€)	2018	2019	2020	2021E	2022E	2023E
Goodwill	0,0	0,0	0,0	0,0	0,0	0,0
Intangible assets	0,4	0,4	0,8	1,4	1,4	1,4
Tangible assets	0,0	0,0	0,0	0,1	0,1	0,1
Financial fixed assets	0,6	0,5	0,7	0,1	0,1	0,1
Working Capital Requirements	**-2,9**	**-2,0**	**-1,1**	**0,4**	**0,4**	**0,4**
% of revenues	*ns*	*ns*	*-0,5*	*0,1*	*0,1*	*0,0*
Gross Financial debt	0,0	0,0	0,0	0,0	0,0	0,0
Cash and short term investments	14,8	11,1	27,2	5,5	5,5	5,5
Net Financial position (net Financial debt if a minus)	**-14,8**	**-11,1**	**-27,1**	**-5,5**	**-5,5**	**-5,5**

Cash Flows Statement – Main items

31/12 (M€)	2018	2019	2020	2021E	2022E	2023E
Cashflow	**-11,4**	**-8,8**	**-11,2**	**-5,0**	**-11,6**	**21,3**
Capital expenditure	4,0	0,0	0,0	0,0	0,0	0,0
% of revenues	*ns*	*ns*	*0,0*	*0,0*	*0,0*	*0,0*
Impact of working capital requirements variation	-0,9	0,9	0,9	1,5	0,0	0,0
Free cashflow	-14,5	-9,7	-12,1	-6,4	-11,6	21,3

Ratio

31/12 (M€)	2018e	2019e	2020e	2021E	2022E	2023E
EPS (€)	**-0,58**	**0,04**	**1,89**	**1,89**	**1,89**	**1,89**
Market capitalisation (€m)	**27,12**	**27,12**	**27,12**	**27,12**	**27,12**	**27,12**
Enterprise value	21,58	21,58	21,58	21,58	21,58	21,58
P/E	**-4,22**	**58,25**	**1,31**	**1,31**	**1,31**	**1,31**
Market to Book	6,17	6,17	6,17	6,17	6,17	6,17
EV/Sales	ns	2,51	0,63	0,63	0,63	0,63
EV/Ebitda	-2,78	25,72	0,82	0,82	0,82	0,82
EV/Ebit	-2,75	28,46	0,83	0,83	0,83	0,83
Ebitda/Sales	ns	0,10	0,77	0,77	0,77	0,77
Ebit/Sales	ns	0,09	0,77	0,77	0,77	0,77
Net Earnings/Sales	ns	0,05	0,61	0,61	0,61	0,61
Gearing	-126,17%	-126,17%	-126,17%	-26,17%	73,83%	173,83%

Important Disclosure

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Genesta Equity Research stock market recommendations reflect the absolute change expected in the share price from a six to twelve-month perspective (in local currencies).

1. Strong buy	The absolute share price performance is expected to be at least +25 %
2. Buy	The absolute share price performance is expected to be comprised between +10 % and +25 %
3. Neutral	The absolute share price performance is expected to be comprised between +10 % et -10 %
4. Sell	The absolute share price underperformance is expected to be comprised between -10 % et -25 %
5. Strong Sell	The absolute share price underperformance is expected to be at least -25 %

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No	No	No	No	Yes	No	No

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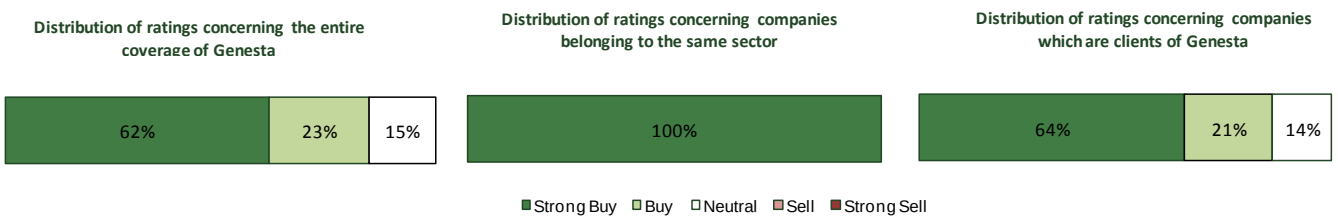
Rating and target price evolution throughout the last 12 months

Date of 1st publication	Rating	Target Price
16th December 2021	Equity Flash **Strong Buy**	**€ 15.20**
3nd September 2021	Equity Flash **Strong Buy**	**€ 13.47**
14th April 2021	Equity Flash **Strong Buy**	**€ 13.45**
3rd February 2021	Equity Flash **Strong Buy**	**€ 12.41**
17th December 2020	Equity Flash **Strong Buy**	**€ 12.77**

Ratings distribution



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