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## Cells and the City: The rise and fall of urban biopolitics in San Francisco, 1970–2020

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### Abstract

STS theories of biocapital conceptualize how biomedical knowledge and capital form together. Though these formations of biocapital often are located in large urban centers, few scholars have attended to how they are transforming urban spaces and places. In this paper we argue that the twinned technological development of cells and cities concentrates economic and symbolic capital and sets in motion contentious practices we name *urban biopolitics*. We draw on archival research and a nearly decade-long ethnography of the expansion of biomedical campuses in a major American city to show how the speculative logics of land development and biomedical innovation become bound together in a process we describe as *speculative revitalization*. We examine how the logics of speculative revitalization imagine a future in which cities and biomedicine produce wealth and health harmoniously together. However, in practice—as buildings of new biomedical urban campuses get built—the dreams of billionaire philanthrocapitalists to create global cities clash with the plans of biomedical researchers to create global health. We document the reproduction of stratified and racialized biomedical exclusions that result while also highlighting the unlikely opportunities for creating alliances committed to creating equitable biomedical research and healthcare in urban communities.

### Keywords

biocapital; biomedicine; life science; philanthrocapitalism; university; urban

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San Francisco has long been a city of hopes and dreams, inspiring frontier visions of gold and free love. In the late 1960s and early 1970s, desperados, militants, utopians, and counter-cultural hopefuls came to the city, drawn by promises of reinvented selves and society (Roszak, 1969). During this same period, the city's main university and teaching hospital—the University of California, San Francisco (UCSF)—launched its own project of reinvention. Building on the healthcare boom of the 1970s (Winant, 2021), UCSF leaders launched an effort to expand. To realize their plans, they sought both new land and new

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talent. In line with the revolutionary and utopic thinking of the time, they lured top graduates from East Coast medical schools westward with promises of intellectual freedom (Bourne, 2011). One such graduate, cell biologist Henry Bourne, traveled west to join the UCSF Faculty of Medicine in 1971 and compared the scientific revolution and experimentation that UCSF promised to that of the hippies: ‘This was not about sexual orientation but *scientific orientation* ... California was a place where you could be an adventurer’ (Yollin, 2011).

By the late 1970s, however, San Francisco had become a city in economic decline. Across the US, deindustrialization transformed urban landscapes, neighborhoods, and labor markets. Healthcare and medicine were among the few industries that continued to grow in this era of ‘stagflation’ (Winant, 2021), and hospitals and universities—‘Meds & Eds’—replaced manufacturing and steel mills as the largest employers. This was especially the case in the ‘rust belt’, though also true of San Francisco. During WWII, Bethlehem Pacific Steel Corporation employed 18,500 workers and made one naval ship every 24 days (Wilson, n.d.). In May 1965, it built its last ship and in 1977, ceased operations (Blum, 1984). In 1982, the City of San Francisco bought the Potrero Yard of Bethlehem Steel for one dollar. While urban industry was withering, leaving behind new tracts of surplus land (Gilmore, 2007), healthcare and education were beginning to flourish. During this same period, UCSF opened multiple new buildings and launched the biotech revolution with the discovery of recombinant DNA (Smith Hughes, 2011).

Though STS scholars have analysed the convergence of practices of creating biomedical knowledge and generating capital—what Sunder Rajan has labeled biocapital (2006)—less attention has been paid to the local political geographies of spaces and places that accompany these transformations. Biotech did at once transform cells and capital, as theorists of biocapitalism argue. But it also fundamentally reworked cities—especially aspiring global cities, like San Francisco. Cells, capital, and cities transformed together through local institutional politics and power struggles that we name *urban biopolitics*.

In this paper, we make visible the dynamics of urban biopolitics by tracing the build-up of UCSF’s new medical campus in San Francisco’s Mission Bay. We begin by situating the development of the Mission Bay campus within the political, economic, and epistemic shifts of the last half-century, as they have played out in California: deindustrialization, the neoliberalization of the university, and the capitalization of the life sciences and medicine. We then turn to our empirical observations of the build-up of Mission Bay that derive from our walking ethnography, archival research, and semi-structured interviews conducted over several years. These multiple sources and long-term analysis allows us to bring to light how the revitalization of land in the former port and manufacturing district of San Francisco became bound up with the transformation of vitality—life itself—at the molecular level, producing what we call *speculative revitalization*.

*Speculative revitalization* joins two domains of revitalization—land and life—and calls attention to the speculative capital investments in research and real estate. We show how it works by focusing on the construction and reconstruction of four biomedical buildings through which visions of collective life and knowledge in San Francisco were imagined, interpreted, and contested. Each site illustrates the dynamics of speculative revitalization

on the ground, as powerful industry, university, and governmental actors attempted to rebuild the Mission Bay district of San Francisco into a biomedical innovation hub. We follow along as decisions about the construction and closure of these four buildings remake relationships between the public university and private industry, reconfigure the relationship between health and wealth, and fundamentally rework the kinds of lives that are fostered and marginalized in the city. Processes of city planning, land-use policies, architectural designs, and capital financing become implicated in transforming not only UCSF's buildings, but also its postgenomic visions of health and biomedicine. We find that building the new UCSF campus reshaped what kinds of life could be made in the city, including who could afford to live and work in it and what kinds of workers and patients would be welcomed.

We end our analysis by reflecting on how the urban biopolitics of speculative revitalization materialized both new racialized geographies (Gilmore, 2007; Ramos, 2019; Dillon, 2024) and new grounds for potentially unexpected alliances. We argue that critical STS scholars might productively engage life scientists, along with community members and critical geographers and race theorists, to work together toward more publicly accountable and just care infrastructures.

### **Nucleating urban biopolitics: Deindustrialization and the rise of health as a route to wealth**

During the last decades of the 20<sup>th</sup> century, San Francisco, like other US cities, underwent a period of urban deindustrialization, neoliberalization, and a transition to knowledge and service economies that reshaped the place and economic importance of healthcare institutions. As Winant (2021) has documented, in Pittsburgh, Pennsylvania, the collapsing urban industrial core of the city created social problems that transformed into health problems. When the steel industry declined due to decreased demand at the end of the Korean War, business leaders pivoted by investing in the build-up of the healthcare industry. This allowed them to take advantage of guaranteed US federal funds for healthcare through the recently created Medicaid and Medicare programs. Well-paid union workers in the steel industry faced layoffs.. Low-paid 'pink collar' healthcare work that had long exploited women's care labor, particularly that of Black women, became the dominant forms of employment (Winant, 2021).

As federal and corporate investment in healthcare increased, public support for universities shifted. To make up for the loss, universities such as UCSF turned toward other mechanisms for raising funds (Newfield, 2008). In California, the so-called 'taxpayers' revolt' eroded the state's ambitious post-WWII commitment to its 'master plan' for post-secondary public education. As a result, the 'state-university partnership' that made the University of California a world class public university collapsed (Gilmore, 2007; Hamilton & Nielsen, 2021). Between 1970 and 2014, the share of the state budget put towards the public university system was cut in half. To address these cuts, the multi-campus UC system implemented several different strategies, most notably the 'indirect cost recovery' funds attached to US federal grants, tuition, and philanthropic donations, and private financing models (Hamilton & Nielsen, 2021). By 2014, state general funds accounted for only

4.4% of UCSF's revenue, down from 22% in 1984 (Bourne & Vermillion, 2017, p. 855). During the same period, UCSF saw its clinical revenue expand sixfold (Bourne & Vermillion, 2017, p. 855). Overall, revenue from the five UC medical centers made up 29% of the UC-wide system budget by 2015-2016, but these funds are largely separate from educational departments (Hamilton & Nielsen, 2021). As of 2022, UCSF claimed the largest amount a public university had secured from NIH for 16 straight years (UCSF, 2023). So, while California state funds dwindled, US federal funds, in the form of Medicaid and Medicare reimbursements, and 'indirects' from NSF and NIH grants allowed the UC to turn clinical care and research into economic assets (Berman, 2012; Hamilton & Nielsen, 2021). Compounding these forces of privatization, UC leadership made the controversial decision to take over the system's debt from the state in 2013, which blocked universities' access to the state public works bonds that financed construction of new buildings and the maintenance of existing infrastructures (Hamilton & Nielsen, 2021). As a result, private donations became significantly more important, especially for capital expenditures like construction.

US universities, including several UC campuses, now partnered with—and thus took on some of the practices of—private corporations (Hamilton & Nielsen, 2021; Lave et al., 2010). They increasingly treated research and education as economic products and assets that functioned to fuel economic growth (Baldwin, 2021; Berman, 2012; Gardner et al., 2017; Lave et al., 2010). After the passage of the Bayh–Dole Act in 1980, which allowed universities to own inventions created from federally-funded research, universities invested significant time and energy in securing, protecting, and licensing intellectual property (IP) (Berman, 2012; Lave et al., 2010). These political-economic and legal changes incentivized the creation of what some have described as the neoliberal university (Newfield, 2008). Federal and city governments, private industry, and philanthropy all supported this transformation of universities and innovation-oriented research into 'economic engines', supported by buy-in from both federal and city governments and private industry, as well as philanthropy (Baldwin, 2021; Berman, 2012). Philanthropic investment focused on translational medical research (Murray, 2013) and trended toward larger donations from fewer, wealthier donors (Hazelrigg, 2019), raising concerns about the transformation of charity into investment—what some have named 'philanthrocapitalism' (McGoey, 2015).

At the same time that the UCs were transformed by these market-oriented neoliberal strategies, the life sciences underwent an analogous transformation. The discovery of recombinant DNA catalysed the biotechnology industry and the reinvention of biomedicine as an institution that gives rise to and promotes technology-driven, marketable molecular approaches and interventions (Clarke et al., 2003; Rose, 2007). Novel molecular approaches to medicine required expensive materials and as a result needed large amounts of capital (Reardon, 2017). Thus, novel techniques for generating capital quickly became bound up with novel techniques for creating biomedical knowledge, creating what Sunder Rajan has called 'biocapital' (2006) (see also Haraway, 1997, p. 65; Helmreich, 2008). The founding partnership of Genentech—between a UCSF faculty member and a venture capitalist—proved that this entanglement could be lucrative and worthy of speculative investment (Hughes, 2011). The company's successes with human growth hormone and insulin proved that recombinant DNA could turn cells into factories producing useful

and valuable pharmaceuticals. UCSF leaders, especially former Genentech CEO Dr. Susan Desmond-Hellman, saw in the development of the Mission Bay campus an opportunity to capitalize on the University's decades-long effort to integrate its clinical and hospital-based services with the lucrative biotechnology industry UCSF had spawned (Grady, 2011).

As universities like UCSF and University of California, Santa Cruz (UCSC) developed molecular techniques for transforming cells into lucrative factories, cities invested in locating these assets within their borders as they tried to address the problem of deindustrialization and to revitalize land, lives, and economies. San Francisco was one among the many cities that supported the build-up of university medical campuses that not only provided clinical care, but also generated wealth through producing patentable molecular approaches to medicine (Baldwin, 2021; Robinson, 2019; Winant, 2021). On these new medical campuses, a typical visit to a medical provider increasingly entailed collection of blood cells not only to run medical tests, but to create the biobanks needed to develop novel biotechnologies (Reardon, 2013).

This transformation of universities and the life sciences and biomedicine into engines of technological and economic innovation has not been seamless. Biological and medical research and innovation have become the focal point of struggles between public and private interests, raising fundamental questions about how contemporary citizens participate and are represented in life science research—and with what consequences for the historically and chronically marginalized and underserved (Benjamin, 2013; Jabloner, 2019). New biomedical science and healthcare facilities have become sites of struggle on university campuses (Baldwin, 2021; Berman, 2012). At UCSC, for example, from November 2007 to December 2008, students occupied redwood trees to protest the building of a biomedical engineering building. They argued that the building represented a divestment of the university from its public mission to provide affordable education in favor of investment in areas that could generate revenue (Stop UCSC Expansion, n.d.). In their responses to protests like this one, universities have struggled to reconcile longstanding public mandates with more recent private obligations created by the need to raise their own funds. This has compelled universities to ask hard questions about what a university is for and to whom they are accountable (Winickoff, 2013).

## The emergence of urban biopolitics

To bring into view the recent entanglement of cells and cities and to help analyse these new contentious zones for producing knowledge, care, and power, we join theorizations of liveliness articulated in literatures on biocapital and biomedicalization (e.g., Sunder Rajan, 2006; Clarke et al., 2003) with those of 'cityness' (Simone, 2010). As Blok and Fariás have argued, cities cannot be adequately understood by approaches 'that reduce the urban to the workings of underlying political-economic structures' (2016, p. 1). To counteract these reductive approaches and to highlight the role of new actors—including nonhumans—and new dynamics, they introduce the notion of 'urban cosmopolitics.' Cities, they argue, are not just formed by political-economic forces. They come alive via the deep entanglements of humans and nonhumans—soil, cells, and symbols—that constitute urban worlds in unknown and uncertain ways (Stengers & Latour, discussed in Blok & Fariás, 2016, p. 8).

Building on the work of Blok and Farías (2016), we identify urban biomedical campuses as assemblages of human and nonhuman actors—cells, tectonic plates, glass, and steel—within cities where ‘common worlds’, with all their exclusions, are contested and constructed (2016, p. 2). They are sites where visions and struggles over the future of life—urban, cellular, molecular, communal, and political life—play out. Behind their shiny facades, tensions build. Beneath their seemingly solid foundations, fault lines form. They embody contestations over the future of urban life on the one hand and cellular and molecular life on the other, what we call *urban biopolitics*.

In this paper, we focus on a dominant mode of urban biopolitics, *speculative revitalization*. Our use of this term is partially a nod to UCSF’s own description of its efforts in Mission Bay. *Revitalization* is frequently—albeit uncritically—used to describe the recent history of Mission Bay, highlighting the transformation of this formerly ‘blighted’ urban area into a new economic center (Cisneros, 2013; see also Baldwin, 2021). We adopt this word—as opposed to similarly invoked words like *renewal* or the more freighted term *gentrification*—to further emphasize connections between land and life.

While revitalization and gentrification are often understood to force people out of their homes and destroy vibrant neighborhoods, we show how the building of high-end medical care facilities can also displace forms of knowledge and care. Specifically, we document how UCSF’s partnerships with land developers and philanthrop capitalists to build grand ‘starchitect’ buildings not only led to a dramatic increase in Mission Bay property values, but further shifted the priorities of the university and its medical research. Alongside changes in public healthcare financing after the implementation of the Affordable Care Act, these events led to the displacement of not only a community healthcare clinic that had long served San Francisco’s marginalized communities but also of the biotechnology companies UCSF leaders imagined as their future partners. In response, scientists found themselves with questions that public health and community activists had long been raising about the proper ends and goals of universities and cities.

## Layered processes, layered methods

These are large and consequential transformations. How can we sense and respond to them? For us, it all started with walking.<sup>1</sup> Pause for a moment and take a short walk with us.

Imagine that it’s 2016. You start at the former location of Bethlehem Steel, walking west from Pier 70. Abandoned warehouses and buildings stand as remnants of the steel age, not yet transformed into arts centers and chic fixture showrooms. Moving up 3<sup>rd</sup> St. along the T Muni line, you encounter the backside of UCSF laboratory buildings with noisy filtration systems and duct work amidst luxury condos under construction. Continuing, you find yourself sandwiched between UCSF Benioff Children’s Hospital to the left and the

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<sup>1</sup>While we collectively engaged in the walking ethnography, the idea for the project actually began with bike rides. For many years, one of us (Reardon) has lived near the Mission Bay campus and over a decade ago began to notice on her bike rides dramatic inequalities along the main artery that runs through the Mission Bay campus: 3<sup>rd</sup> Street. On one end of 3<sup>rd</sup>—the North end, where the Mission Bay campus exists—fancy coffee shops and wine bars were opening, and the future of biomedicine was being built. On the other end, community activists struggled to keep community health centers open and residents experienced elevated rates of deaths from gunshots (GVA 2024) and worse outcomes from cancers like breast cancer (Guan et al., 2019).



Chan Zuckerberg Biohub just one block to the right, newly occupying a triangular A-frame originally built for the genomic sequencing company Illumina. The screech and clank of construction noise knock around you as you walk. After pausing for the traffic on 16<sup>th</sup> St., you turn down 16<sup>th</sup> toward the 280 highway and cars zipping toward Silicon Valley. Winding your way between bright campus buildings and into a grass quad, you find the rounded amphitheater stairway carrying you up to Genentech Hall. The building's marble exterior is one of the few showing some age; nothing else was here when its construction began in 1999. Crossing back towards 16<sup>th</sup>, you feel the highway traffic vibrate above and watch your step as crisp concrete turns to dirt and gravel. As the gleaming campus recedes, we'll leave you at the site of the 'Box City' encampment perched along the Caltrain tracks at 7<sup>th</sup> Street. Soon, the cardboard shelters and more permanent structures fashioned of plywood, pallets, and other scrounged materials will be gone, cleared out by the City's Department of Homelessness 'Encampment Resolution Team'. In images of the 2017 eviction, UCSF's buildings still gleam in the background as excavators scrape up peoples' shelters and belongings (see Figure 1) (Friedenbach, 2017).

There are many routes through the history of San Francisco's 'revitalized Mission Bay District'. Between 2015 and 2020, members of our team walked and cycled many of them. Sometimes, we took photos, invited colleagues, and reflected on curated histories. Other times, we moved through our own workdays and routines. Routes like the one described above sparked questions about just what was being built around us and oriented us to how the physical spaces, as well as the meaning and purpose of the university, were under constant construction and reconstruction.

Between 2016 and 2020, we organized several collective walks through Mission Bay as it rapidly developed. Our walking data collection practices drew on emerging methods in urban anthropology and geography and included extensive photography of Mission Bay's streets and buildings, documenting their changes over time (Ingold & Vergunst, 2008; Lefebvre, 1996; Pink, 2008; Yi'en, 2014). Our team also hosted four walking tours through Mission Bay (see Figure 2). During these tours, we led small groups of colleagues and students through campus streets and plazas, observing construction in real time. We began each tour with a short presentation of our emerging findings and invited new questions. At the end of the tour, we asked how what we observed challenged or confirmed these preliminary findings. Answers reshaped our research directions from the ground up.

We augmented this walking ethnography with semi-structured interviews with thirteen key figures in San Francisco from 2018 to 2020. Interviewees were chosen based on one or more of the following criteria: their institutional knowledge of the UCSF Mission Bay campus (8); their involvement in the life sciences and biotechnology communities in Mission Bay (5), and their leadership in public health in San Francisco (4). During our interviews, we asked participants about changes they witnessed in biomedical research, clinical care, and public health in the Bay Area over the past three decades. We asked them to identify new technologies and practices of biomedicine and public health, practices or models of medicine and public health that have gone out of style, and challenges to biomedical research and clinical care. We also asked interviewees about the *value* of their work and how they judged this value in terms of scientific, clinical, or economic potential. Interview

questions also explored relationships between financial viability, profitability, innovation, and health. This included asking participants about how their work relates to tackling current health and social inequalities in the Bay Area.<sup>2</sup> To shield participant's identities, we do not link their professional status or institutional affiliations to their words in our analysis below.

Finally, we collected and analysed documents, including public documentation of City planning meetings and meetings of the Regents of the University of California, photographic records of Mission Bay from the San Francisco Public Library, UCSF's oral history archive, and statements from UCSF's Office of Communications. We also drew on beat reporting from local business publications, particularly the *San Francisco Business Times*. These archival documents allowed us to track the longer history of the neighborhood and the relationship between UCSF and the City of San Francisco. This document analysis also allowed us to trace some of the hopes and plans for Mission Bay that had been embraced, built up, and sometimes abandoned along the way.

Our methods and analysis were iterative and mutually informing. Through our initial walking ethnography, interviews, and archival data collection, we identified several sites and buildings that embodied questions about what constituted the 'right' places and spaces for biomedical innovation. These questions informed our archival research and interviews, which in turn informed future walking tours. For this article, we chose to analyse four key sites that together provide a picture of urban biopolitics and speculative revitalization at work over the past three decades in San Francisco's Mission Bay: Genentech Hall; the UCSF Mission Bay Hospital Complex; the Joan and Sanford I. Weill Neurosciences Building; and New Generation Health Center. The first three are part of the UCSF Mission Bay campus, and the last is a UCSF-supported reproductive health clinic.

Genentech Hall was the first research building constructed there and represented the high point of the belief in the common composition of academia and industry, health, and wealth. The building of the UCSF Mission Bay Hospital Complex began to reveal frictions and contestations. New Generation Health Center, and its displacement from its physical building, intensified struggles over land and life. Finally, the construction of the Weill Building revealed the interactions between the flashy architecture that had come to define Mission Bay and the research taking place there.

## Land and life: Genentech Hall and the birth of biotech on the Bay

Changes to the land have repeatedly altered the provision of care and resources in San Francisco. The earthquake of 1906 destroyed several of San Francisco's existing low-lying hospitals. The devastation spurred city and academic leaders to work together to transform instructional buildings on Mount Parnassus into a teaching hospital, the first-ever UC hospital (UCSF, n.d.a., n.d.b.). As the decades passed, it gradually became clear to UCSF's administrators that their hastily and haphazardly built Parnassus Heights main campus could not adequately serve the growing medical university's clinical and research needs

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<sup>2</sup>Interviews were transcribed and thematically coded, aided by a qualitative data analysis software package (HyperResearch). We used an open coding approach (Charmaz, 2006), allowing codes and themes to emerge gradually through repeated coding and re-coding of interview transcripts by the research team.



(UCSF, n.d.d.). Furthermore, an agreement made with community residents in 1976 drew firm boundaries around the campus (Rutter, 1992; UCSF, n.d.d.). In 1994, a California Senate bill required Parnassus to undergo seismic retrofitting (OSHPD, 2021; UCSF, 2007). By this time, many believed the campus to be cramped and outdated. William Rutter (1992), onetime chair of UCSF's Department of Biochemistry and Biophysics, described the buildings as 'drab', 'bleak', siloed, and un conducive to scientific collaboration. UCSF's challenge was how to become a top-tier medical school and recruit top talent with an uninspiring, labyrinthine campus.

The solution, Rutter argued, was to draw on San Francisco's allure:

Individual scientists have quite sophisticated tastes, so naturally they want to enjoy themselves, especially when they come to San Francisco.... We tried to make up for the lack of style in the facilities of the school. It was bad enough to walk down those old green halls. So we tried to get everyone to think positively about the school and its environment as an attractive place to develop a career.

(Rutter, 1992, pp. 69–70)

Additionally, by the 1980s, most UCSF leaders believed that UCSF needed a second campus to meet demands for space and increase its appeal (UCSF, n.d.f.). Yet where to put this second campus?

The earthquake that spurred the creation of the UCSF Parnassus Heights campus also made Mission Bay. Originally marshland, refuse from the city's construction gradually filled in this area in east San Francisco (MBCC, n.d.; Olmsted, 1986). When the 1906 earthquake destroyed most of the city, rubble from rebuilding efforts further filled in the marshland. After 1910, the infilled Mission Bay became instrumental to the city's shipping industry, developing into a shipyard (Olmsted, 1986). Railways crisscrossed the new landscape, carrying cargo to and from ships offshore (see Figure 3). However, deindustrialization, the growth of trucking and air transportation, and the rise of container shipping at the Port of Oakland eventually left Mission Bay and its railyard in disuse (Placzek, 2017; SPUR, 2005).

The City government, UCSF, and private interests alike embraced the area's transformation into a research hub. Consistent with the tendency of other university-anchored redevelopment efforts to depict land slated for redevelopment as blighted and empty (Baldwin, 2021), the City's redevelopment agency, along with a railroad land company-turned development agency and a consortium of Bay-Area life sciences business leaders, framed the disused Mission Bay as an underdeveloped blank slate upon which their joint futures could be written (Cisneros, 2013; OCII, n.d.). At the core of this collective vision was a partnership between academia and industry linking health and wealth, entangling the futures of UCSF and the city in a process of speculative revitalization.

Genentech provided a model for this vision. Herbert Boyer, then a UCSF professor, cofounded Genentech in 1976. At the time, many UCSF faculty disapproved and questioned the ethics of starting a for-profit company as university faculty (Rutter, 1992). Indeed, the flow of work and materials between Boyer's UCSF lab, Genentech's contracted UCSF lab space, and Genentech's own facilities (Smith, 2020) soon became the source of an IP dispute

(Boyer, 1994; Rutter, 1992). UCSF alleged that genetic material brought to Genentech by a scientist who left their university job enabled production of the human growth hormone drug Protropin, the company's first marketed product. The dispute showcased the contentious negotiations over space and property produced as academia and industry drew closer and the results of public research transferred into private hands.

The dispute was initially settled in 1979 with a \$2 million payment from Genentech to UCSF—a settlement Rutter considered 'extremely disadvantageous' (Rutter, 1992, p. 198). Protropin hit the market in 1985, making the company \$43.6 million during its first year (Pink Sheet, 1987) and launching California's biotechnology industry. City government and real estate developers sensed potential; when UCSF sought a new campus to further pursue lines of biomedical research like those that proved so successful for Genentech, they jumped to help. In the late 1990s, Mayor Willie Brown worked with the San Francisco Redevelopment Agency to arrange the donation of 13 acres of City-owned Mission Bay land to seed the effort (Cisneros, 2013; SFRA, 1998). The Redevelopment Agency made UCSF's Mission Bay campus the anchor of its Mission Bay Redevelopment Plan, the City's largest redevelopment project since the construction of Golden Gate Park. The City expected the new campus to address the area's problems with blight, 'incompatible land uses', and 'depreciated or stagnant property values' (SFRA, 1998, p. 2). Then-UCSF Chancellor J. Michael Bishop echoed this vision in a 1999 UC Regents meeting: 'Our development will be the linchpin of the effort to revive the neighborhood, and thereby to enhance the economic climate of San Francisco, and to further enrich life in this great city' (Cisneros, 2013).

The Bay Area Life Sciences Alliance (BALSA) also saw opportunity in the University's new industry-friendly research model. BALSA consisted of biotechnology professionals, a former UCSF faculty member, a San Francisco city official, and the co-founder and chairman of The Gap, Inc. (Cisneros, 2013). As BALSA's chairman, Rutter played a major role in bringing his vision for UCSF to life (Rutter, 1992). In that role, he helped bring in Mayor Brown and the final key player, Catellus Development Corporation. Catellus was a new corporation spun off from the railroad companies that owned much of Mission Bay. Donating 30 acres to UCSF allowed Catellus to simultaneously ingratiate itself to City government, secure contracts for the infrastructural work necessary to make the campus a reality, increase the value of the rest of its Mission Bay property, and refashion itself as a modern, diversified development corporation (Delgado, 1997; Derdak & Pederson, 1998; Knapp, 1997; SPUR, 2005). Catellus's donation, combined with the City's, made Mission Bay the University's most attractive option in terms of cost and available contiguous space. Valued at \$166 million, the donation was at the time the largest-ever gift to UCSF (Desmond-Hellmann, 2009).<sup>3</sup>

These groups forged a collective vision that UCSF would 'nucleate' Mission Bay for biotech. One research scientist who worked in the area at the time of the deal explained:

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<sup>3</sup>This landmark was set and surpassed several times from 1990 to 2020 as the Mission Bay campus took shape, first by the Catellus Corporation's land donation and then by donations from Marc Benioff and Joan and Sanford Weill, as detailed in this article. All have since been surpassed by more recent gifts from the Helen Diller foundation totaling \$1 billion for new hospital facilities at Parnassus Heights (Brooks, 2018).

They [Catellus and the City of San Francisco] gave the land to UCSF in order to nucleate the area. [Catellus] nucleated, gave [the land] to UCSF in order to make the rest of the land valuable, which was very successful.

(Interview)

City officials wanted to turn the area into an economic engine and establish San Francisco as a biotechnology center. They envisioned that ‘bio-technical research’ would grow up around the University (SFRA, 1998, p. 3).

Initially, their plan succeeded. By 2015, the neighborhood had become home to 70 biotech incubators and accelerators (Terry, 2016). According to the head of Bayer’s Science Hub, which opened its CoLaborator incubator in Mission Bay, synergy with the university and the venture capital concentration motivated biotech leaders to invest in Mission Bay:

The reason that Bayer moved here in 2011 was to be close to UCSF. This is the same reason that the startups want to be here so desperately. They often have their advisors from UCSF and they’re using core facilities. Also, the venture groups are here.

(cited in Zimmer, 2016)

The first building constructed on the new campus embodied these hopes for university–industry cross-pollination. Its name, Genentech Hall, reflected one outcome of a second, more lucrative settlement of the Protoprin dispute (Wired, 1999). Genentech agreed to pay the University \$200 million, \$50 million of which would be used to finance the construction of the building. The University allowed Genentech to name the building. This agreement signaled the University’s willingness to continue to cultivate relationships with the burgeoning biotech industry.

Genentech Hall’s architecture embodied hope for the collaboration and interaction between different research specialties that leaders such as Rutter had envisioned (Clark Construction Group, 2020). It featured research ‘neighborhoods’ interspersed with common spaces like kitchens and libraries and open areas without walls, encouraging the interdisciplinary exchanges lacking at Parnassus that are hallmarks of translational research (Levine, 2002; Robinson 2019). It also featured extensive use of Italian marble and an ornate, modernist commissioned chandelier (ArchNewsNow, 2004; Baker, 2003). As a lone pillar dotting a flat and empty landscape, the building embodied UCSF’s vision: interactive, innovative, luxurious, and research-oriented (see Figure 4). Opened in 2003, it portended a new, symbiotic era of the revitalization of cells and city.

## **Can billionaires help build the future of biomedicine? The hospital complex and contentious urban biopolitics**

In February of 2015, as Mission Bay was filling in, doors opened to a medical complex that UCSF promised would transform its investments in the new campus into health benefits and position it as a ‘next generation’ leader in integrating research, technology, and care (UCSF, 2014) (see Figure 5). As the complex’s video tour voiceover explains:

UCSF Medical Center at Mission Bay is poised to transform not just the skyline, but also the way healthcare is delivered, both here and around the world. Located on the same campus as UC San Francisco's world-renowned research program, it brings together leading physicians and scientists to accelerate the translation of laboratory discoveries into actual treatments and cures.... Inside, you'll find the latest technology... as well as space to accommodate tomorrow's innovations.... [a]ll housed in a structure that is itself a kind of innovation.... UCSF Medical Center at Mission Bay: transforming the healthcare environment.

(UCSF, 2017)

Like Genentech Hall, the hospital complex embodied ideals of innovation and collaborative interaction. According to Keith Yamamoto, a leading research scientist in cellular and molecular pharmacology who has served in numerous high-level administrative positions at UCSF, it was 'not just more square feet for UCSF, but ... address[ed] the future of the way biomedical research will be done and be translated into something that will improve the health of people' (quoted in Temple, 2014, p. 168). Then-Chancellor Susan Desmond-Hellmann also envisioned a global epicenter of translational biomedical innovation. Describing the complex, she explained:

Patient care, research, and teaching are mixed in a way that fundamentally changes what patients have access to at UCSF.... So the children who are cared for at the UCSF Benioff children's hospital will quickly get those discoveries, and then through our education and teaching that gets disseminated all across the world.

(Vidinsky, 2010)

This vision was closely tied to Desmond-Hellmann's ambitions to make UCSF the global leader in precision medicine, an approach to medicine driven by biomedical and technological innovation (Kavanagh, 2013; Kenney & Mamo, 2020). Realizing this goal meant co-locating research, teaching, clinical services and laboratory facilities. This, in turn, required investing in buildings that could serve all these functions, which cost far more than what the University alone could afford. Thus, a \$100 million gift from San Francisco-born Salesforce CEO, Marc Benioff, and his wife Lynne in 2010 to build the complex's first building—the Benioff Children's Hospital in Mission Bay—proved pivotal to the project's financial viability (Vidinsky, 2010).

Yet, as UCSF and the City would learn over the next decade, accepting money from philanthrocapitalists came with costs. Benioff had visions that did not align with the century-long UCSF/City commitment to work together to expand access to medical services. Indeed, in the eyes of many at UCSF, Benioff's larger plans and visions of Mission Bay directly competed with this public health goal. Shortly after the donation to fund the hospital, Salesforce announced the purchase of \$278 million worth of land in Mission Bay for a new campus and corporate headquarters (Hoge, 2010). Then-Mayor Gavin Newsom praised the decision, seeing in Salesforce another economic engine: 'Salesforce.com has made an extraordinary investment in the future of San Francisco that will mean thousands of jobs and anchor our status as a global center for innovative companies' (Hoge, 2010). He and other

City leaders envisioned Mission Bay not merely as a hub for biotechnology and biomedical research, but as a global hotspot for a broad range of innovation.

While the City supported Benioff's plans for a bayside complex, much of Salesforce's own organization remained unconvinced (Barret, 2012; Shih & Finkle, 2012). Many interpreted it as an expensive vanity project, and Salesforce pulled the plug in 2012. Their withdrawal posed formidable problems, including the need to find buyers for the large swath of Mission Bay Salesforce had purchased. They found three: UCSF, the Golden State Warriors NBA franchise, and—through the real estate trust Alexandria Real Estate Equities—the rideshare company Uber (Hoge, 2014a; Leuty, 2014).

The tensions between UCSF's aspirations to become a leader in global health and Benioff's desire to transform San Francisco into a global city were most inflamed by his decision to sell land directly adjacent to the Mission Bay campus to the Golden State Warriors. Benioff, an avid sports fan, believed that San Francisco needed a new sports arena. The Warriors, on the heels of a string of championships, were looking to relocate from Oakland, and Mission Bay, an up-and-coming waterfront neighborhood, seemed like an ideal destination. Benioff explained in 2015: 'Without great sports franchises, we can't be a great city.... This is about the future of San Francisco. What is San Francisco going to be?' (Richtel, 2015). The Mission Bay Alliance—a group made up primarily of UCSF affiliates whose board included Rutter—disagreed. They argued that the decision to put the new Warriors stadium in Mission Bay would not only create traffic, blocking access to the hospitals, but would undermine the vision of Mission Bay as a biomedical innovation hub (Leuty, 2015a).

UCSF leadership eventually endorsed the plans for building the stadium following a three-way agreement between the University, the City, and the Warriors organization that included the designation of a \$10 million annual fund for traffic-related issues (Leuty, 2015b). This failed to appease the Alliance, then represented by Bruce Spaulding, UCSF's Vice Chancellor for Advancement and Planning when UCSF chose Mission Bay for its expansion. However, the California Supreme Court refused to hear their case, and the Warriors played their first game in Mission Bay in October 2019 (McDermid & Leuty, 2017).

The available contiguous land that had so appealed to UCSF for cultivating partnerships with biotech was quickly filling up. Mission Bay was becoming congested, much like the old campus. However, this time it was not with more scientists, doctors, and patients, but tech workers and basketball fans. Information technology companies moved into the increasingly expensive and space-limited Mission Bay. For example, Alexandria Real Estate Equities leased the land it purchased from Salesforce to Uber, despite the real estate investment trust's usual life-science focus (Hoge, 2014b; Kenney, 2016). At the same time, biotech moved out, looking for cheaper land and space to grow. CIRM relocated to Oakland (Richtel, 2015). The sequencing giant Illumina moved to the South Bay. The vision of Mission Bay as a life sciences corridor was fading (Lee, 2015; Zimmer, 2016).

If land value measures success, then the nucleation of the Mission Bay worked too well. UCSF's nucleation of Mission Bay with Genentech Hall did attract biotech. It also increased

the land's value and magnetism for investors, seeding contentious and high-stakes urban biopolitics that had the the power to shape the future of biomedicine and San Francisco. The same interviewee who discussed the nucleation of Mission Bay during the mid-90s told us:

Now the vision has really been lost because the idea was we would nucleate this for biotech, and what happened? It was so successful and land values went up so much that now we have Uber, and the Warriors, and all this stuff, and the land values are so high... biotech can't use it. ...[I]t's a few biotech companies, but it's become very different from what was envisioned.

A billionaire's vision to transform San Francisco into a global city—a key node in global networks of tech development and flows of transnational capital—began to overtake UCSF and City leaders' visions to 'advance health worldwide'.<sup>4</sup> As new biotech buildings filled up the former ports and railroad yards, real estate developers and City leaders increasingly saw promise and potential profits in other industries and forms of capital.

Mission Bay and San Francisco were changing. According to Jeff Sheehy, a governing board member of CIRM, the answer to Benioff's question, 'what is San Francisco going to be?' was apparently, 'just another capitalist, consumerist, profit-driven, money-motivated Disneyland' (Richtel, 2015).

## **Speculative displacement: The struggle to save the New Generation Health Center**

Even before biotech and biomedicine found themselves increasingly displaced from Mission Bay, the neighborhood's transformation had contributed to the marginalization, defunding, and displacement of other ways of life and modes of healthcare. The history of a reproductive health clinic serving San Francisco youth since 1974 is exemplary.

At the end of the 19<sup>th</sup> century, the UC-affiliated colleges first entered an agreement with the City to provide patient services at the City and County Hospital, which eventually became San Francisco General Hospital (UCSF, n.d.c.). UCSF has since played a defining role in providing clinical services to uninsured and underinsured patients through its partnership with the San Francisco Department of Public Health (DPH). In 1974, The New Generation Health Center (New Gen) became one of several UCSF services operating within this partnership system. Opened as a weekly clinic for teenage reproductive health services operating out of a San Francisco General Hospital building, it moved to nearby Potrero Avenue in 1997 when Dr. Philip Darney formalized the clinic under UCSF's Department of Obstetrics, Gynecology and Reproductive Services (Yollin, 2011b). New Gen has since been a key community facility, serving the reproductive health needs of low-income youth and young adults from the Mission District and Bayview-Hunters Point, two of the city's poorest and most racially diverse neighborhoods (Tsai, 2022).

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<sup>4</sup>UCSF began its effort to become a leader in global health at the turn of the millennium. In 2009 it graduated its first students to hold MAs in global health. See <https://www.ucsf.edu/news/2009/07/101047/ucsf-students-first-united-states-receive-masters-degree-global-health>.



Far from a simple story about UCSF's benevolence, the founding visions of New Gen merged public health interests, population control, and clinical research on contraception with a distinctly Californian flair. In a 2004 oral history, Darney recalled that his motivations to pursue family planning and abortion training grew from his own worries about population growth. As a Berkeley undergrad, he had read *The Population Bomb* (Ehrlich, 1968) and 'saw population growth in a simplistic way, as something that was going to destroy California's [beaches and mountains]. The Sierras would be full of people. The oceans would get polluted. The waves were already getting crowded' (Darney, 2004, pp. 15–16). Alongside population control, Darney also passionately advocated for women's rights. Thus, New Gen carried medicine's mixed legacy as both a form of social control and means of empowerment (Conrad, 1979; Ehrenreich & Ehrenreich, 1978).

Administratively, New Gen was caught between two institutions that viewed the role of clinical services differently. From the UCSF School of Medicine's (SOM) perspective, UCSF was providing clinical education and conducting research at a DPH site and needed to balance its budget annually. From the DPH perspective, New Gen needed to demonstrate that it was saving the City money—for example, by preventing unwanted pregnancies and hospitalizations. However, these complex funding dynamics were largely invisible to community members, who simply saw the UCSF logo as representing a multi-billion-dollar enterprise that was constructing new half-billion-dollar buildings in Mission Bay (Interview).

Community perceptions of UCSF and New Gen became especially important when the SOM abruptly announced the clinic's closure in 2016. Several years of financial instability had left the clinic running a \$24,000 monthly deficit (Colliver, 2016). The implementation of the Affordable Care Act (ACA) and California's Medicaid expansion meant more low-income people now had insurance coverage for contraception at the very same time that fewer could afford to live in the city. These changes decreased New Gen's clientele. On top of these stressors, none of the administrators wanted responsibility for the financial sustainability issues: 'UCSF kept saying, "this is DPH, this is DPH." And DPH sort of said, "Hey, you guys didn't follow the right practice. UCSF should take care of it." So [New Gen] was very much caught in the middle' (Interview).

The announcement of the planned closure of New Gen became a touchstone moment, marking for many a transformation of the city into a place where only tech workers and other wealthy, increasingly-white elites could live and work. It prompted outcries from both community members and SOM trainees and students staffing the clinic, who rallied and worked with the clinic's director to fundraise and figure out a plan for keeping the doors open. Jessica Calderon, who was co-chair of the San Francisco Youth Commission's youth justice committee, captured the sentiments of many:

UCSF closing this clinic is just another step toward supporting the gentrification of our city and moving toward a new faux-progressive San Francisco that is ultimately unfriendly for the young women and men of color.... If UCSF truly believes in fostering equity and diversity when serving the Bay Area communities, they should stand by their word and do just that.

(Colliver, 2016)

Another community health leader, Joi Jackson-Morgan, Executive Director of 3rd Street Youth Center & Clinic, created a petition criticizing UCSF's decision, which gathered over 5,000 signatures (Jackson-Morgan, n.d.).

A year later, New Gen announced that it could keep its doors open by relocating and sharing a space with the Homeless Prenatal Program, which occupied a building just a one-minute walk from New Gen's original location (see Figure 7). This building, now known as the Lipman Family Building, had earlier had its mortgage paid by philanthropist and HPP board member Barry Lipman and his wife Marie (Bigelow, 2014). With help from the San Francisco General Hospital Foundation, Jackson-Morgan raised more than \$1.4 million from an array of donors: foundations, individual community leaders, and UCSF employees and students (Kurtzman, 2018). Today, New Gen remains open as a joint venture, operating within the Homeless Prenatal Program's building under a DPH license and administrative authority, with UCSF clinicians (Fernandez, 2017). While the fundraising accomplished its immediate goal of keeping the clinic's doors open, it did not solve longer-term financial problems or bureaucratic ambiguities. New Gen would continue to face pressure to justify itself in economic terms. New Gen's old building was refurbished and reopened as a high-end home fixtures store (see Figure 8).

New Gen's story brings into relief the uneven effects and cross-cutting logics of speculative revitalization. While public institutions partnering with private industry and wealthy donors to make investments in land and life ideally benefits both, private interests to grow capital and prestige can and often do subsume public and community interests. New Gen's doors today remain open thanks to a mix of community, philanthropic, and government support. However, it has become increasingly difficult for the people it serves and the healthcare it provides to find homes in San Francisco. UCSF's new gleaming buildings house profitable personalized care and research, not costly public health, which largely remains at the San Francisco General Hospital. Despite UCSF's focus on the importance of health equity (see e.g., UCSF, 2022), its turn toward profitable research and care marginalizes longstanding commitments to provide other critical public health services.

### **Changing the face of medicine: The Weill Building**

These logics and practices of speculative revitalization did not just further marginalize and displace community clinics already at the University's margins; in notable instances, it upended the power of biomedical research leaders at UCSF's core. This is powerfully illustrated by the building of UCSF's Joan and Sanford I. Weill Neurosciences Building.

In 2016, Sanford 'Sandy' Weill and his wife Joan gave UCSF \$185 million—a new record gift—for the construction of a neurosciences building in Mission Bay (Dolan, 2016). Weill had become a billionaire through finance, and eventually was President of American Express and CEO and Chairman of Citigroup (Forbes, 2021; UCSF, n.d.e.). The Weills had a long history of giving to medical causes, including \$600 million to the Cornell Medical School. However, their donation to UCSF had a personal touch. Sandy Weill's mother suffered with Alzheimer's, and his father died while struggling with depression (Dolan, 2016).

Weill understood his contribution as part of a paradigm shift in medical research funding:

Given budget constraints at the local, state, and federal levels, it is no secret that governments will not have the ability to fund all that is needed in biomedical research and beyond.... Individuals, foundations, and companies must step up to the plate to help fill this void to create public/private partnerships to enhance education, medical research, and culture. This, we believe, will be the new paradigm in philanthropy for the future.

(quoted in Farley, 2016)

Embodying the interdisciplinary ‘neighborhood’ approach to designing buildings at Mission Bay, the Weill Institute was designed to break down disciplinary boundaries in addressing mental illnesses and bridge the gap between bench and bedside (Farley, 2016). This six-story, 281,800 square-foot building was to house a combination of research programs, a vivarium, and clinical space, plus staff and faculty offices.

The UC Regents approved the building in May 2017 with a total budget of \$357.6 million, including \$141.6 million through external financing and \$41 million from campus funds (UCOP, 2017). However, these plans hit a snag when the building failed to meet the Weills’ aesthetic expectations (see Figure 6). As the UC Regents documented, realizing the Weills’ aesthetic vision required increasing the approved budget by 25%:

Subsequent to Regental approval of the project in May 2017, it became clear during a series of meetings with the project’s primary donor that there was a disparity between UCSF’s intended approach and the donor’s vision/expectations for the interior and exterior finishes of the project.

Specifically, the donors view the project as establishing a destination building that will serve as a recruitment tool to attract the best and brightest neuroscientists from around the world, and provide patients access to superior clinical services and treatments. The campus agrees that adopting this vision is important to the future of UCSF Neurosciences as a global leader. However, the design modifications needed to achieve these goals require a greater investment than originally anticipated.

(UCOP, 2018)

UCSF needed \$89 million in additional construction costs. One scientist familiar with the details of the donation recounted the negotiations and pointedly analysed their effects:

[Weill] came out here and gave \$175 million. That's not a trivial amount of money. It was at that time the largest amount UCSF had ever gotten. And so, they went apeshit ... I mean, it was just ... you never saw anything like it. ... Well, because he didn't think the building was pretty enough, he added an outside that increased the cost by about \$100 million. And he didn't offer any extra money for that \$100 million. UCSF had to borrow more money to pay for it.

...

And what's happening is that money is being taken out of money that goes to scientists, for salaries.... Buildings replace people as the focus of financial

investment.... And then the [administrators] become entrepreneurs whose skill is getting money out of the people who give it.... Some of them are wonderful scientists, too. But many of them are just essentially really good at squeezing donors for money. And that is, that's a real disaster.

(Interview)

Another research scientist discussed how these dynamics disempowered scientists and empowered philanthropists, giving them the ability to affect how much investment UCSF buildings required: '[Weill] still has a huge effect. It's terrible how we cater to donors. I think there should be some kind of constitution that prevents Chancellors from doing this' (Interview). The problem for this interviewee was that donors have too much of a say in not just the buildings, but the science conducted in them: '[Scientists] should really decide what we want in the way of science. Not donors.'

These interviewees' insights show how courting megadonor philanthropy made buildings a focus of financial investment and shaped research priorities (see also Bourne & Vermillion, 2017). While state-of-the-art buildings promise to attract top scientists and create world-leading institutes, they also take decision-making and priority-setting power away from those same scientists. Some of those we spoke with reflected on these tradeoffs: 'It's top-down money.... The people who are below are essentially gathering the crumbs under the table of the rich folks at the top.'

These trends are larger than UCSF. Declining state and federal funding increasingly leaves researchers chasing private money (Alberts et al., 2014; Boat, 2010). This worries research scientists: '[This trend is] going to continue, and it's going to become entirely a Zuckerbergoid research world' (Interview). Like the Benioffs and Weills, Facebook founder Mark Zuckerberg and his wife Priscilla Chan are powerful donors. Their donations to UCSF and to San Francisco General Hospital led to a controversial renaming of the hospital to The Priscilla Chan and Mark Zuckerberg General Hospital (Schleifer, 2020). They also founded a nonprofit organization, the Chan Zuckerberg Biohub, with the stated aim 'to cure, prevent, or manage all diseases in our children's lifetime' (CZI, 2016). This interviewee expressed worries about a world in which wealthy elites in finance and tech name biomedical buildings and define the research and medical priorities. Another interviewee familiar with interactions with high-level donors suggested that informal pitches made by elite researchers at dinners in the private homes of these wealthy donors rival NIH study sections as critical sites for decisions about the future of biomedical research. Researchers and administrators able to court wealthy individuals play outsized roles in shaping the future of the university and its research and care.

## Conclusion

San Francisco's modern incarnation took form in the wake of a natural disaster and medical crisis—the 1906 earthquake. City leaders have long celebrated the partnership with UCSF that was cemented as San Francisco rebuilt its public health infrastructures (Berman, 2020). A century later, many hoped that the new Mission Bay campus would be another success story. Instead, the campus has tested the proper ends and goals of the partnership. Activists,

public health workers, and scientists alike asked what kinds of lives and care would have a place in a reshaped city. Precision, high-tech, molecular approaches to medicine that UCSF leaders championed might bring headlines, venture capital investment, and scientific and medical prestige. But with what consequences?

Today, Mission Bay remains awash in construction dust and snarled traffic as new offices, a basketball arena, and UCSF buildings compete for prime real estate. UCSF's research was at one point the core of the vision of a biotech Mission Bay. But the value of the neighborhood and its real estate that this vision helped create has attracted new powerful investors. Most recently, the San Francisco Giants, a Manhattan Real Estate firm, and the credit giant Visa have undertaken major construction projects in Mission Bay's north end. While official narratives of Mission Bay's 'revitalization' hail its success and future promise (Cisneros, 2013), displacements and disparities are built into its buildings, and borne out in its science and medicine. City leaders, scientists, health care providers, and citizens confront challenges of navigating the often-incompatible goals of private wealth and public health. Researchers and clinicians navigate a Mission Bay transformed from a biotech nucleus into a playground for tech elites. They criticize the increasingly finance-focused orientation of the University and the outsized role of philanthropic donors in setting priorities. City and community leaders and clinicians engineer temporary workarounds to now-endemic problems. A health clinic is saved—for now. Yet fundamental challenges and questions persist: How can the City of San Francisco and UCSF continue their partnership to support public health in the wake of diminishing state funding and increasing pressure to harness the generation of wealth to health? When the City's speculative approaches to land development become entangled with the speculative approaches of universities and corporations to revitalize cells, whose lives receive care? Whose hopes and dreams are realized? Whose lives no longer belong?

Answering these questions requires bringing into view the twinned epistemic and political dynamics of mutually transforming cells and cities, what we have named urban biopolitics. Bodies concentrate in cities, creating pools of DNA and data that bio-info-tech enthusiasts promise can revitalize postindustrial urban spaces, creating health and wealth for all. But as the case of Mission Bay demonstrates, while planners may hope that the aspirations and goals of private wealth and public health align, in practice, the capital-intensive infrastructures required for speculative, innovation-driven health and medicine threaten to sideline the delivery of critical clinical care to marginalized communities. We end with some speculative thoughts of our own about the import and potential of these dynamics.

First, there is nothing new about the displacement and marginalization resulting from this form of urban biopolitics. Speculative revitalization adds to our understanding of the spatialized and racialized biopolitics described by Winant (2021), Gilmore (2007), Benjamin (2013), Jabloner (2019), Dillon (2024) and others. These stratified biopolitical dynamics operate both through co-optative inclusion and exclusion (Ehrenreich & Ehrenreich, 1978). For example, since the 1980s California has disproportionately taken Black populations squeezed by deindustrialization in cities like San Francisco and concentrated them as nearly unpaid incarcerated labor in the new anchor institution for some largely white rural communities: prisons (Gilmore, 2007). These same communities now find themselves

overrepresented in the forensic DNA databases that further fuel mass incarceration (Chow-White & Duster, 2011; Jabloner, 2019). They are also increasingly subject to recruitment to the biorepositories needed to create tailored molecular approaches to medicine at elite urban biomedical campuses like UCSF, while being pushed out of the resulting revitalized urban spaces and their high-end medical care (Epstein, 2007; Perigo, 2020).

Second, speculative revitalization produces epistemic displacements that undermine the forms of medical care that such communities rely upon. Institutions like UCSF increasingly favor forms of biomedicine that generate revenue and donors. This undermines longstanding commitments not only to public health, but to public science.

Finally, and importantly, these displacements produced new possibilities for alliances. The build-up of Mission Bay turned stratified biopolitics into public spectacle. As we walked and biked through these spaces, the stark inequalities and public debates about the changing city were inescapable, generating critical questions that crossed academic and civic borders: What kinds of life will the city care for and protect? What is the role of a public biomedical university? Who gets a seat at the table, at the drawing board, in the waiting room, at the lab bench? What is San Francisco going to be? As cities become infrastructures for generating global capital, can the institutions—including public hospitals and universities—maintain their civic liveliness and commitments to public benefit? As our fieldwork revealed, we were joining community activists, health care providers and UCSF researchers in asking these critical questions. UCSF scientists have objected as decisions formerly made by faculty shifted to donors. Their concerns have echoed those of colleagues decades earlier who wrestled over the right relations between academia and industry in the early days of Genentech. Thirty years later, biotechnology researchers had become subject to even more powerful financial forces.

Yet, far from being another story of the hegemonic power of neoliberalism, we argue that the convergence of exclusionary and cooptative forces forms the ground for new potential alliances. The fault lines between researchers and private interests leave an opening for alliances among STS scholars, scientists, clinicians, and community leaders. The possibility exists to reimagine health and medicine with attention to social justice and local places. Together we can ask what is sacrificed when the future of medicine is subsumed to the search for new regional economic engines and the speculative biomedical dreams of industrialists and philanthrocapitalists.

As of this writing, many of Mission Bay's bayside towers and downtown offices of X (formerly Twitter), Salesforce, and Uber have been emptied by remote working arrangements accelerated by the COVID-19 pandemic. The future of life in urban centers is uncertain, as are the futures of urban public health departments and public universities across the US. In these precarious times, it is crucial to attend to how the futures of cells and cities are intertwined. As cities attempt to leverage the economic potential of medicine and the life sciences, whose lives receive care? Whose values shape their anchoring institutions—universities and hospitals? We offer urban biopolitics and speculative revitalization as conceptual tools to keep these questions at the heart of social studies of biomedical science.



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**Figure 1.**  
The "Box City" encampment is destroyed by San Francisco Public Works. Image courtesy of Coalition on Homelessness.



**Figure 2.** Research team members lead a walking tour in Mission Bay. Visible in the background is the construction of the Chase Center, future home of the Golden State Warriors. Photo credit: the authors.

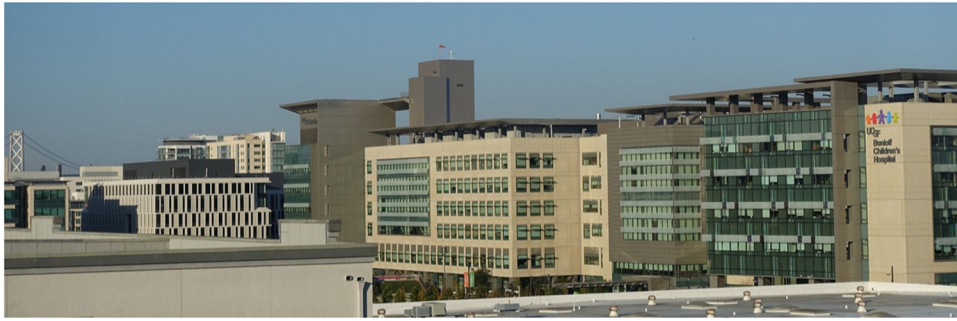


**Figure 3.**  
The railways of Mission Bay. Source: San Francisco Public Library.





**Figure 4.**  
Genentech Hall under construction in Mission Bay. Image courtesy of UCSF.



**Figure 5.**  
A panorama of the UCSF Medical Center at Mission Bay, with UCSF Benioff Children's hospital at far right. Photo credit: the authors.

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**Figure 6.** The Joan and Sanford I. Weill Neurosciences Building after donor-requested renovations to its façade. Photo credit: the authors.

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**Figure 7.**  
New Generation Health Center's new shared home with the Homeless Prenatal Program.  
Photo credit: the authors.



**Figure 8.** The new fixtures store that has moved into New Gen’s old building. Photo credit: the authors.