• A building which reflects RCP core values

• An iconic building

• Wellbeing: It is committed to promoting disease prevention, and good physical and mental health for individuals and communities

• We will invest in our future and build on our heritage

• We will shape the future of Health + Healthcare

• ‘...a once in a generation opportunity......’
Air
Quality standards including filtration, cleaning protocols, microbe control, material safety

Water
Testing and monitoring to control public water additives and system contaminants

Nourishment
Promotion of healthy food options, nutrition labelling, safe food preparation and sourcing

Light
Gain free and circadian lighting design, effects of surfaces & contrast, light quality, daylighting

Fitness
Active design, enhanced ergonomics, activity incentives, and structured fitness programs

Comfort
Physical and visual ergonomics, thermal, olfactory, and acoustic comfort

Mind
Organizational policies and transparency, biophilic design, flexible and adaptable spaces

Cardiovascular
Digestive
Endocrine
Immune
Integumentary
Muscular
Nervous
Reproductive
Respiratory
Skeletal
Urinary
WELL Body
<table>
<thead>
<tr>
<th>14 PATTERNS</th>
<th>STRESS REDUCTION</th>
<th>COGNITIVE PERFORMANCE</th>
<th>EMOTION, MOOD &amp; PREFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Connection with Nature</strong></td>
<td>Lowered blood pressure and heart rate</td>
<td>Improved mental engagement/attentiveness (Bederman &amp; Veselos, 2006)</td>
<td>Positively impacted attitude and overall happiness (Barbin &amp; Prey, 2010)</td>
</tr>
<tr>
<td><strong>Non-Visual Connection with Nature</strong></td>
<td>Reduced systolic blood pressure and stress hormones</td>
<td>Positively impacted on cognitive performance</td>
<td>Perceived improvements in mental health and tranquility (Uk Koloppoly, Haseij et al., 2012; Jänkö, et al., 2011; Terasawa, Park &amp; Myers, 2010; Myers, 2009)</td>
</tr>
<tr>
<td><strong>Non-Rhythmic Sensory Stimulation</strong></td>
<td>Positively impacted on heart rate, systolic blood pressure and sympathetic nervous system activity</td>
<td>Improved concentration and memory restoration</td>
<td>Improved perception of temporal and spatial pleasures (gellnermania) (Farrington, de Deyn &amp; Caddeo, 2012; Zhang, Aries, Nazoglu &amp; Ren, 2010; Anon., Zhang &amp; Hubner, 2006; Zhang, 2007; de Deyn &amp; Ringler, 2000; Hettich, 1999)</td>
</tr>
<tr>
<td><strong>Thermal &amp; Airflow Variability</strong></td>
<td>Positively impacted comfort, well-being and productivity</td>
<td>Improved perception of concentration and psychological responsiveness</td>
<td>Observed preferences and positive emotional responses (Bederman, 2011; Barbin &amp; Prey, 2010; Ukeles, Smith, Siemann et al., 2013; Kaminska &amp; Hummel, 2008; Bederman &amp; Veselos, 2006; Siemann &amp; Oranski, 1991; Prey &amp; Altenhein, 2000; Ukeles, 1989)</td>
</tr>
<tr>
<td><strong>Presence of Water</strong></td>
<td>Reduced stress, increased feelings of tranquility, lower heart rate and blood pressure</td>
<td>Improved perception and psychological responsiveness (Kwak et al., 2013; Rieff et al., 2013)</td>
<td>Observations of preferences and positive emotional responses (Bederman, 2011; Barbin &amp; Prey, 2010; Ukeles, Smith, Siemann et al., 2013; Kaminska &amp; Hummel, 2008; Bederman &amp; Veselos, 2006; Siemann &amp; Oranski, 1991; Prey &amp; Altenhein, 2000; Ukeles, 1989)</td>
</tr>
<tr>
<td><strong>Dynamic &amp; Diffuse Light</strong></td>
<td>Positively impacted circadian system functioning</td>
<td>Improved concentration and memory restoration</td>
<td>Improved perception and psychological responsiveness (Kwak et al., 2013; Rieff et al., 2013)</td>
</tr>
<tr>
<td><strong>Connection with Natural Systems</strong></td>
<td>Increased visual comfort (Park et al., 2012)</td>
<td>Enhanced positive health responses; Skilled perception of environment (Keltz et al., 2008)</td>
<td></td>
</tr>
<tr>
<td><strong>Biomorphic Forms &amp; Patterns</strong></td>
<td>Decreased diastolic blood pressure</td>
<td>Improved comfort</td>
<td>Observed view preference (Ukeles, 2004, Joyce, 2007)</td>
</tr>
<tr>
<td><strong>Material Connection with Nature</strong></td>
<td>Positively impacted perceptual and physiological stress responses</td>
<td>Improved creative performance</td>
<td>Observed view preference (Ukeles, 2004, Joyce, 2007)</td>
</tr>
<tr>
<td><strong>Complexity &amp; Order</strong></td>
<td>Reduced stress</td>
<td>Reduced boredom, irritation, fatigue (Chow &amp; Guo, 1999)</td>
<td>Improved comfort and perceived safety (McKey &amp; Bruce, 2007; King &amp; Taylor, 2006; Prey &amp; Altenhein, 2000)</td>
</tr>
<tr>
<td><strong>Prospect</strong></td>
<td>Reduced stress</td>
<td>Improved concentration, attention and perception of safety</td>
<td>Induced strong pleasure response (Bederman, 2011; Lister, 2011; Benzi, 2006; Blood &amp; Zahnle, 2001)</td>
</tr>
<tr>
<td><strong>Refuge</strong></td>
<td></td>
<td></td>
<td>Resulted in strong dopamine or pleasure responses (Kahwes, 2014; Lister, 2011; Benzi, 2006; Blood &amp; Zahnle, 2001)</td>
</tr>
<tr>
<td><strong>Mystery</strong></td>
<td></td>
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<tr>
<td><strong>Risk, Purl</strong></td>
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**Notes:**
- Barbin & Prey, 2010: Positively impacted attitude and overall happiness.
- Farrington, de Deyn & Caddeo, 2012: Improved perception of temporal and spatial pleasures.
- Kettler et al., 2012: Improved positive health responses.
- Lister, 2011: Induced strong pleasure response.
- Prey & Altenhein, 2000: Improved comfort and perceived safety.

**Sources:**
- Bederman, 2011
- Farrington, de Deyn & Caddeo, 2012
- Benzi, 2006
- Blood & Zahnle, 2001
Competition Image – dancing DNA

Protection against cold and heat

Prevents mechanical impact

Protects tissue against chemical and physical damage

Prevents micro-organisms from penetrating

Destruction of inoculated micro-organisms

Resorption of specific substances

whilst allowing a certain level of physiological water evaporation. Together with sebaceous glands, synthesis of hydrolipids

Pressure, vibration and tactile sensation
DEVELOPING THE FAÇADE GEOMETRY

1. 1.5m Organisational Grid
2. Pythagorean Triple
3. Voronoi Geometry
4. Macro Scale
5. Micro Scale
6. Scalable Geometry
TRABECULAR COLUMNS
TRABECULAR COLUMNS
BIOPHILIA WITHIN THE RCP OFFICE AND THE WIDER BUILDING

This is an example of how we would introduce Biophilic design into the RCP office space and the overall building.

**PATTERN 1**
Visual Connection with Nature
- Views outside to external landscaping and the wider Liverpool area
- Views to the vertical village garden for 4 rows of desk ing
- Use of graphics to re-create views blocked by the core

**PATTERN 2**
Non Visual Connection with Nature
- Scent of the indoor planting
- Auditory connection could be made using sounds of birdsong, water or insects
- Use of natural materials throughout such as timber
- Patterns of nature shown in the flooring, upholstery etc
- Use of scented timber such as pine, red cedar or maple
- Introduction of an aromatherapy installation using scents such as Lavender to improve concentration or Citrus to reduce stress

**PATTERN 3**
Non Rhythmic Sensory Stimuli
- Natural movement of the plants
- Views outside, people, plants, birds moving
- Kinetic Sculpture that moves when people walk by - Ned Kahn Wind House & Micro Turbines

**PATTERN 4**
Thermal and Airflow Variability
- Opening and closing of doors
- HVAC ventilation
- Movement of people

**PATTERN 5**
Presence of Water
- Sounds of water as part of pattern 2
- Proection onto planting/sky garden to mimic water - Hérmut Eigermann Wave Dream
- Water feature being reviewed by OOB E
- Waterfalls create negative hydrogen ions which, in high enough concentrations, clear the air of mold spores, pollen, odors, cigarette smoke, bacteria, viruses, dust and other hazardous airborne particles
- Negative hydrogen ions are also known to be a natural anti-depressant
BIOPHILIA WITHIN THE RCP OFFICE AND THE WIDER BUILDING

This is an example of how we would introduce biophilic design into the RCP office space and the overall building.

**PATTERN 6**
Dynamic & Diffuse Light
- Use of blinds and task lighting throughout
- Variants in natural light and shadows throughout the space
- Projection created in pattern 5
- Light shining through the planting
- Printed cell facade creating various shades and levels of light

**PATTERN 7**
Connection with Natural Systems
- OORE to review possibility of a herb garden in the breakout areas
- Use of recycling points
- Interactive screens throughout the building which provide regular updated building statistics: “This week we have recycled more products than we have thrown away,” “today we have saved X on our carbon footprint” etc.
- Sky garden and breakout area encourages users to undertake ‘Shin-Yoku’ or ‘Forest Bathing’. Seated planters allow staff to sit amongst the planting.
- Use of seasonal planting by OORE.
- Outside: pre-existing medicine garden for staff to walk in - Therapeutic Landscapes by Marcus and Sachs
- Links with local food growers or allotments could be made.

**PATTERN 8**
Biomorphic Forms and Patterns
- Natural colours and patterns used throughout the upholstery
- Supergraphics used in pattern 1 to re-create blocked views.
- Inclusion of biomorphic artworks - Alan Bur Johnson Artwork, Charlie Weinman Sculpture
- Facade design relates to our natural systems

**PATTERN 9**
Material Connection with Nature
- FSC timbers used throughout in both floor finishes and FF&E
- Use of wool base upholtstery - Camira
- Features such as cork and stone flooring
- Use of or reference to local stones/materials such as Sherwood and Helsby sandstone in the design create “genus Leci” (Spirit of Place)

**PATTERN 10**
Complexity and Order
- The facade design facilitates in creating both balance and imbalance with its biomorphic pattern
- Use of the office block/cell design provides staff with recognisable spaces/formats within a non regular plan
- Use of natural materials such as timber or stone flooring creates irregular pattern within a fixed format again creating complexity and order
- Use of mixed ceiling type, felt, timber, baffles and linear grid create mixed finishes and colours in a irregular pattern.
BIOPHILIA WITHIN THE RCP OFFICE AND THE WIDER BUILDING

This is an example of how we would introduce Biophilic design into the RCP office space and the overall building.

PATTERN 11
Prospect
- Views over the city
- Unhindered views across spaces
- Glazed walls and visibility through the office
- Open plan layouts where possible
- Spanish steps in the ground floor allow views down across the space

PATTERN 12
Refuge
- Use of private work pods and enclosed meeting booths - Ovo Energy
- Private breakout areas enclosed by planting in both the offices and the conference suite
- Contemplation, prayer and nursing rooms throughout the building
- Shinrin-Yoku from pattern 7
- Mixed layouts throughout allow users to find excluded spots - Air BNB Village Office

PATTERN 13
Mystery
- Meeting pods create enclosures
- Pathways through the ground floor encourage curiosity
- Skygardens obscure views in some areas, particularly the conference suite
- Use of seated storage both allows and inhibits views
- Frame entrances and openings enticing users in
- Atrium spaces invite people to look up, encouraging them up the building

PATTERN 14
Risk and Peril
- Views over the city from various heights
- Unhindered views across spaces and down into the vertical gardens
- Mixed height spaces
**FITNESS**

Fitness is not only a benefit to human health but it is also a key element to happiness and mental well-being. Alongside an in-house gym and vertical village concept (promoting the use of stair between office floors) and active office layout has been introduced. In a bid to reduce ‘static’ working various spaces have been provided for flexible or alternative working promoting movement around office (see next page).

**MIND**

One of the key elements to mental well-being and productivity is acoustics; studies have shown a 60% drop in productivity when exposed to distracting noise. To tackle this, acoustic baffles have been introduced throughout the carpet with various acoustic backings suited to the functionality of a particular space (see next page). Acoustic screens to help break up the space and also the addition of planting which has shown to reduce noise by as much as 5 decibels.

**LIGHT**

Regular access to daylight is a key factor in staff happiness and health. To ensure staff circadian rhythm isn’t disrupted we have located desks alongside the external glazing and ensured that the maximum distance from natural light for any working area is no greater than 3.4 metres at any point. In addition to this, window treatments would be provided to help reduce glare and heat when necessary. Silver backed semi-transparent window blinds both allow light to still enter the space whilst reflecting most of the glare and best to help balance both sets of needs. This provides staff the flexibility to create the environment that best suits them.

**AIR**

Carpets with AirMaster technology would be included throughout the building; fine dust is a determining factor in air quality and directly linked to potential health problems as it acts as a carrier for a number of microbial contaminants, such as mould, pollen and allergens. Already, the required standard in the Netherlands, AirMaster carpet can help capture and retain fine dust in the air for release when cleaning ensuring a cleaner air policy.

**BIOPHILIA**

Plants in the workplace provide a two-fold benefit, not only do they promote a pleasant and relaxed working environment but they can also help maintain a clean air policy: studies show a 20% reduction in dust when plants were introduced into an office space and increase in productivity by 10-15%. To maximise on this there is a vertical village garden floor 3 levels of office space, a perimeter planting through some key circulation spaces and planters included on every desk.

**WATER**

As well as encouraging staff hydration through kitchenette location (See “EAT” on the following page for details), filtered water taps would be included throughout the building at regular intervals enabling a clean drinking policy.

**COMFORT**

In order to provide staff with maximum comfort ergonomic furniture would be included throughout sit-stand desks for flexibility and active working (see “FITNESS”), ergonomic desk chairs to help reduce work-related musculoskeletal disorders, monitor arms and task lights to aid the reduction of neck and eye strain all of which helps maintain a lower sickness record and promote staff well-being.
• Concept based around well-being by maximising indoor environmental quality
• Contribution to biophilia
• Improves productivity in working environment
• Research based on study by NASA
• Reduce levels of VOCs in the atmosphere
• Increase levels of oxygen
• Plant choice is essential to success

Plants will be chosen to be appropriate for the specific microclimate, particularly within the upper floors, and to provide interest throughout the year. This selection will create a memorable environment that building occupants can appreciate at all times, both aesthetically and through improved environmental quality.
Royal College of Physicians

- Version 2
- Project aim: platinum
- Currently achieving: platinum
RCP THE SPINE

WELL CREDITS

1. Fruit and vegetables make up a large proportion of the food offering.
2. Staff provided with the opportunity for lunch breaks away from desks.
3. Indoor dining areas accommodate more than 20% of building occupants.
4. Active facade at least 40% of facade area at street level.

AIR

WATER

NOURISHMENT

LIGHT

MOVEMENT

THERMAL

COMFORT

SOUND

MATERIALS

MIND

COMMUNITY
WELL CREDITS

RCP THE SPINE

1. Noise attributed to HVAC systems accounted for in acoustic strategy.

2. Mechanical system has ability to maintain relative humidity between 30% and 60%.

3. Direct connection to nature introduced through planting, natural materials, etc.

4. Water quality tested and results accessible digitally.

AIR
WATER
NOURISHMENT
LIGHT
MOVEMENT

THERMAL COMFORT
SOUND
MATERIALS
MIND
COMMUNITY
WELL CREDITS

- **AIR**
  - Reverberation (RT) times in conference room: less than 0.5s

- **WATER**
  - Non-hazardous and low-toxic building materials

- **NOURISHMENT**
  - Air quality monitors installed and results shown digitally to occupants

- **LIGHT**
  - Lighting complies with colour rendering and flicker requirements

- **SOUND**
  - Lighting complies with illuminance recommendations in guidance

- **MATERIALS**
  - Asbestos, mercury and lead in building materials restricted

- **MIND**
  - Thermal parameters monitored at regular intervals in regularly occupied spaces

- **COMMUNITY**